The Builder.

VOL. XXXVI. No. 1857. SATURDAY, SEPTEMBER 7, 1878.

ILLUSTRATIONS.

New Warehouses, St. Mary Axe, London.—Mr. H. H. Collins, Architect 933
New Monastic Church, West Gorton, Manchester (Plan, 941).—Messrs. Pugin, Ashlin, & Pugin, Architects 939

CONTENTS.

Natural Forms and Architectural Ornament 925
Haddington 926
Fans and Fan-making 927
The Irish Board of Works and National Monuments 929
Interior Economy of the Office 929
Weak and Strong Points in the English Section at the Paris Exhibition 930
Westminster Abbey 931
The Career in Great Britain of Revived Gothic 931
The Liverpool Water-Supply 933
The Railways of the Balkan Peninsula 934
A Mushroom Town 935
An Idler in Paris and its Show 935
Memorial of Sir G. G. Scott 936
St. Alban's Abbey Roof 936
New Warehouses, St. Mary Axe 936
New Monastic Church, West Gorton, Manchester 941
The Thaulow Museum 941
Anomalies in Architects' Practice 941
The Health of Tenby 942
Mathematics and the Fine Arts 942
Our Lead Mines and their Produce 943
The late Mr. Benjamin Colls 943
Jedburgh Abbey 943
Art in Ireland 944
"The Decoration of St. Paul's: A New View" 944
The Water-Supply of Hexham 944
Contract: Goodson v. Gibbins 944
Allhallows Church, Tottenham 944
Leeds Town-hall 945
Open-mouthed Pipes v. Ventilators 945
Building Contracts 945
New Organs 945
Ventilation of Sewers 945
St. Sepulchre's Church, Holborn 945
New Aquariums 945
Railway Matters 945
Fine-Art Exhibitions 946
Drainage Items 946
New Institutions 946
Docks and Harbours 946
Casualties 946
Masters and Men 947
Notes from the North 947
Books received: Latham's Sanitary Engineering (Spon) 947
Finances of the Paris Exhibition 948
The late Mr. David Cousin, Architect 949
Miscellanea 949

Natural Forms and Architectural Ornament.

IN the course of the remarks made by Mr. Waterhouse on things in general at a meeting of the Manchester Architectural Society, which we printed last week, there occurred an observation in regard to terra-cotta, to the effect that the extent of repetition which was almost unavoidable in terra-cotta ornament, and which would naturally lead to the employment of geometric rather than of natural forms as ornament, was hardly to be considered as any strong argument against the use of terra-cotta in architectural design. The omission of forms more or less reproducing nature need not be regretted nowadays, because it was so difficult to get carvers to execute even in stone figures and foliage which could be truly said to marry with the architecture of which they ought to form the chief attractions.

This expression of opinion is, we believe, only what many of those who have felt interested in architecture on its artistic side have more or less vaguely felt for some time past. It is becoming now not infrequent to find the feeling that a building is almost better without ornament than with; and when an architect builds a house for himself he not infrequently entirely omits ornamental embellishments which it would be considered almost a neglect of duty not to introduce in the case of a house built for a client. And there is no doubt that the style of carving capitals, &c., which was brought in with the Gothic revival, and was hailed as a return to nature and to reality in art-work, has palled upon our taste, and that it is becoming a common feeling now that a large spreading carved capital after the French Gothic type in a new building is rather an impertinence than otherwise, and a sign of want of refinement of taste on the part of the designer. A few years ago capitals innumerable of this kind were sketched, copied, re-designed and improved upon, and Gothic foliage ornament in a general way was regarded as a thing to give complete satisfaction; and carvers busied themselves with praiseworthy zeal, and often with much real taste and feeling, in hunting up and reproducing in the church or other building they were engaged upon, the flora of the district in which it stood, pleased to think that they were then working in the spirit and on the method of the men of old time. And now it seems we are to find ourselves at the old conclusion in regard to this as well as so many other efforts of modern architectural art, that "There is nothing in it."

Perhaps the failure has not been altogether so great as some people would have us think. A great deal of healthful enjoyment for the art-workman, at all events, has come out of it, and a good deal has been done that we have all admitted to be very pretty, and sometimes original as well. But probably the truth is that it has been the same with architectural ornament as with architecture in general. While professing to copy nature, we have really been copying other persons' reproductions of nature, and adopting their taste as if it were really our own. All ornament which is founded on nature has a true and a real interest about it; and all that which is founded on mere artificial and arbitrary form is liable at last to be found wanting, and to be felt as pretentious and unreal. And the copying of that which is already a copy of nature by another hand is really the copying of the artificial, not of the natural, however we may disguise it to ourselves. It is of no avail to seek out plants and other objects direct from nature, if, after all, we only carve them in the manner and taste which is not born of our own spontaneous feeling, but of our admiration for what has been done by our predecessors in the art.

That appears to be the explanation of the distaste for naturalistic carving which is now springing up. As long as we confined ourselves simply to reviving Gothic *en masse*, the revived form of foliated carving did well enough, and sometimes a certain amount of originality and interest was given to it by the efforts of the cleverer among our art-workmen. Even at this stage of the proceedings, however, the modern Gothic carving was often felt to be rather trivial and flimsy in effect compared with the old,—a result which may be attributed not only to the impossibility of getting the work of one age to look like that of another, but to the over-refinement of finish arrived at in the execution of carving in stone specially selected for the purpose. The carved ornament of a Mediæval church or cathedral was almost always executed in the stone of which the main building was constructed, and hence seemed more intimately to belong to it. The appearance of a modern church with walls of a coarser stone, but with Caen stone capitals delicately undercut and finished, might be very neat, but it certainly had a much more artificial and pretentious effect; so that even here the spirit of Mediæval work was not revived. And now that Gothic forms of building have been, to a great extent, either abandoned, or so much modified as to be hardly recognisable, we feel that the Gothic spirit of ornament (the *modern* Gothic spirit that is to say) which still lingers is out of keeping with our buildings; that, as Mr. Waterhouse says, it will not marry with them; and that its style appears to our at present purged critical vision somewhat coarse and cabbagey, and more especially so when introduced so profusely as it often is into London buildings, where we feel at once instinctively that its only possible fate is to form a receptacle for soot and dirt, and to be gradually corroded and blunted, till first its salient angles, and then all its characteristic form, are gone.

All this, however, is no argument that the reproduction of natural forms in ornament is a mistake, or that we shall gain by abandoning it. Certainly the miserable festoon decorations which are coming into fashion are no improvement on Gothic carved detail; as far as such things are concerned, our practice in designing ornament is "nothing bettered, but rather grows worse"; for festoons and garlands are neither nature nor art, and the adoption of such a form of decoration can only arise from indolence, which induces men to save themselves the trouble of thinking or designing (and designing means thinking, in the first instance) by taking old examples of buildings just as they stand, faults and all. But it would seem that the adoption of natural growths as ornamental design depends for its success on a kind of transmuting effect of the artist's own mind and feeling upon them, fitting the forms for their situation, and the expression which they are intended to have or to give to the building. In Mediæval ornament this certainly was so. The carver transmuted the natural forms into the language of stone or wood, and into the style of treatment which his own habit of mind and method of execution, combined with the nature of the material, lead him to impart. It is of no use, however, for us to try to do the same thing in the same way; that is only the way to become mechanical and artificial; and it may be urged with all reason that it is better to have ornamental work really and unaffectedly mechanical, than to have that which professes to be individual work, but is really only ruled by a mechanical trick of hand acquired by the effort to imitate an old school of work. The point is to have our own way of doing it.

That seems to be really where the deficiency lies. There is in most of the ornamental carving that is put upon buildings in the present day no particular reason apparent either for the form assumed by the ornament or the position which it occupies. It is so many feet run of carved foliage, in regard to which it may be presumed that the architect who designs it (if he does design it), and the carver who executes it, exercise some kind of choice and taste, but it is not apparent on what grounds, or why it should be what it is rather than anything else. Usually it is a repetition of some well-known type of foliage ornament of a known style. If, instead of that, some natural forms in the growth of the district, for instance, were adopted as the standard for imitation (and to take the flora of the district is perhaps about as good a "lead" as an ornamentist can have), and then it were to be considered how such forms could most suitably be treated and conventionalised so as to suit the material in which they are to be

executed and the place they are to occupy, and at the same time to preserve and emphasise *what is most essential and characteristic* in the original natural growth,—character and originality in the ornament would grow and develop themselves in the process, without any such absurdity as would be involved in a carver taking up his tools and saying to himself "Let's be original!" which is a perfectly futile proceeding, producing no possible result save a search after eccentricity. We call especial attention to the importance of noting and realising what it is which constitutes the special character, the personality, as one may even say, of the natural object from which the ornament is taken; because that is what is so often missed, and especially so certainly missed, when the work of another man is copied instead of the work of nature herself. We see repetitions of types of floral ornament which we know by heart—which are obviously representations of a certain flower or leaf, but which seem to be made as if the designer were possessed by that same spirit of vague generalisation referred to in the line quoted from a contemporary poet in a recent number of this paper, apropos of the critic who could only see that one hand was "like another hand." But in regard to the adoption of floral forms, for example, into ornament, there is first the question, What is the real characteristic of the original form as a type, that which essentially gives it its peculiar expression in our eyes? The perception of this is quite a different thing from the mere perception that it is large or small, white or yellow, flat or round, or has less or more petals. All these things together go to make up its character; but there will generally be found to be a something not easily expressed, a peculiar turn of line or form, omitting which, the real character and grace and meaning of nature's workmanship are lost. Yet it is thus that flowers are constantly copied in art work and architectural ornament, and the newspapers that give an account of the work tell you that the carvings in such a position are taken from such a flower, which Mr. ——— has cleverly worked into the ornamental design. But all that has been thus worked in is the collection of dry facts which, put together, constitute nature's design; but in the putting together lies the magic. The difference is like that between the work of a painstaking realistic portrait painter and a man of genius; the first gives every little detail of the face, yet misses it somehow; the second is not perhaps so accurate in detail, but he seizes hold of what he sees to be the predominant and characteristic expression of his sitter, and gives the mind as well as the mere features. Then there is the consideration of the infinite minute variations in nature in the same type, which any mechanical means of producing ornament is obliged entirely to ignore and pass over, but in which a multiple charm resides. And when we feel that we know in what the characteristic beauty of the original body lies, comes the consideration how that may be best represented in the material with which we have to do. All the characteristics of nature we may presume we cannot represent; the tenuity, the fragility, perhaps the colour of the original, must be lost; we must then emphasise that quality which the material will represent,—the form, the surface modelling, the method of growth, and of grouping. If the form of the flower we are treating is essentially flat, we must keep it in a flat treatment in the translation of it into ornament; if it is bulky and prominent in outline, these peculiarities will be emphasised. As a general rule, it may be said that in town architecture we err on the side of giving too much depth and undercutting to our foliage ornament, making it a receptacle of dirt and rain-water; and that often both a more permanent and refined effect would be produced by a flatter and more delicate treatment in a suitable durable material. Thus the adoption of natural forms in ornament, even with the most direct effort to realise their naturalism to their fullest extent possible, does not exclude conventionalism; on the contrary, it demands it, only it is a conventionalism having for its object the more full realisation of the spirit (though not all the details) of nature, and differs entirely from that sort of conventionalism of which (though in place sometimes) we have had a good deal too much, and which seems to consist in squashing a flower out flat and drawing a circle round it, or pulling it in pieces and arranging the *disjecta membra* separately in some sort of geometrical relation to one another.

Some of these considerations may apply equally, one may say, to statues, considered as architectural decoration founded on life. In the case of buildings which are decorated with statues of personages whose history is connected with the objects of the building, as we so frequently see, in the majority of instances the statue does not the least succeed in interesting us by realising and rendering vivid the special character of the personage represented, if it be an historical personage; or any special character at all, if the representation be an abstract one. That is why in so many buildings we are impressed with an idea that some third-rate statuary's yard has been ransacked for figures that were in stock, and could be had cheap. We see simply so many figures in a row; and that they are figures seems to be thought sufficient. But the subject of the treatment of the human figure in decoration is much too large to be considered merely as an offshoot to the question of architectural ornament. But there is one consideration which the mention of this subject suggests, in relation to the employment of terra cotta. In the paper which led to these observations, it was observed that though terra cotta implied mechanically-reproduced ornament rather than carving, yet that for the highest class of ornament, that of figure-work, there was the best opportunity possible; since the material might be modelled by the master-mind, and carried directly to the kiln to be fixed by heat, without the intervention of any inferior hand in copying or mechanically reproducing the design. This is unquestionably one of the greatest advantages which the use of a clay material gives; but why this reasoning should not equally apply to the production and modelling of architectural ornament of all kinds we cannot perceive. Except where economy is a matter of the highest importance, it would seem that, in fact, terra cotta gives the opportunity for a greater freedom of design and execution in architectural ornament, rather than for an increasingly mechanical system; only, of course, the design must be prepared well beforehand, as it cannot be worked afterwards *in situ*.

If natural forms are used in ornament, it is certain that their natural characteristics, and something of the life and growth of nature, should be retained in their translation into the form of ornament, in accordance with the principle indicated above; otherwise their greatest charm is lost in the process, and the real and greatest advantage of going to nature for inspiration is thrown away. It may, however, be a question whether the naturalistic treatment, even under these circumstances, is or is not the characteristic of the highest and purest architectural style. The question would, probably, be answered differently in accordance very often with the personal feelings and associations of individuals. As far as the history of architecture can speak for itself, the answer seems to be rather in favour of artificial than of natural decoration. At least, admitting that Greek architecture carried the art of architectural expression to the highest point of refinement which it has ever yet reached, it must be owned that it did not depend very much upon natural form for its detail. The honeysuckle ornament and the Corinthian capital, the nearest approaches to nature in Greek detail, are yet essentially artificial, especially in their rigorously symmetrical form and refusal to allow of any of the little variations of nature. And, on the whole, it may probably be said that this is the natural result of the highest development of architecture in an essentially civilised age and society. Architecture is the most artificial of the arts, and when it is carried to its most complete artificial development, anything like the freedom and variety of nature seems impossible in it without introducing a discordant element. There is certainly a tendency at this moment towards artificial ornament, after the brief outbreak of naturalism in the Gothic revival: a symptom probably that the whole of our architecture is tending towards artificiality. The revival of truly "wolfish" Gothic in a society so artificial and luxurious as that of our day could hardly be more than a passing whim, though it has been a costly one in regard to the expenditure of money on buildings many of which are not likely to retain any one's admiration permanently. Two pleas, however, may be urged in favour of a more or less naturalistic school of ornament. A town is essentially an artificial creation; but in those quarters in which there is least of wealth and luxury, in which the artificial comforts of town life and the artificial beauties and refinements of architecture cannot be realised except to a very limited extent, it may be best and fittest and most beautiful (morally as well as physically) to try to convey through the decoration of the buildings something of that living and breathing life of nature which to the majority of the inhabitants is a thing seldom or never attainable in itself, a reminiscence or a hearsay only. Those in more favoured places and circumstances, who can move about as they will and visit various scenes, do not need, and probably would not care for such hints of nature conveyed through architecture. Their town life is artificial,—is meant to be so, and their architecture may well be artificial also, or at least there is in this case no moral reason why it should not. But from the artistic point of view it may be suggested that the combination in ornament of the forms and growths of nature in their most essential characteristics, with a great finish and refinement of style and execution, presents an ideal of architectural decoration which has hardly been accomplished yet in the western world, though we find it in India in something very near perfection. In the attempt to attain such a combination as this there lies perhaps a field for something new in the decorative treatment of town architecture in this country.

HADDINGTON.

FEW visitors to Edinburgh, when exploring the vicinity, find their way to the quiet market town of Haddington, yet it is well worthy of a a visit were it for no other reason than that it is the birthplace of John Knox. An hour's run by rail from the Waverley station is all that is needed to reach it, and the line runs through one of the most fertile districts in Britain, where the traveller may observe the science of agriculture carried out in the most intelligent manner. Not a weed is to be seen in the large, richly-cultivated fields, the hedge-rows are in perfect order, superfluous trees are rare, but there is a fair allowance of wood around the dwellings of the landowners. Nor is the route devoid of picturesqueness, for all along to the left you catch glimpses of the glittering waters of the Forth, studded with sails and dotted with islets, and beyond lie the Lomonds of Fife, the advanced picket of the Grampians.

Then, again, you pass over scenes of great historical interest. After passing the gay watering-place, Portobello, "the Brighton of Scotland," you come to Inveresk, close to the battlefield of Pinkie, where Cromwell signally defeated the Scottish army, "the Lord having delivered them into his hands." At Tranent Junction the train stops on the battlefield at Prestonpans, where the undisciplined host led by "the Young Cavalier" defeated the trained troops led by Sir John Cope, which event was chronicled by Skirving as "he went for the coals in the morning," Tranent being the centre of a coal-mining district. As the train glides from the station you see Bankton, the residence of the pious and gallant Colonel Gardiner (known to every reader of "Waverley"), in front of which he fell mortally wounded, and at or near the spot stands an obelisk, with four *couchant* lions, erected to his memory. Onwards to the left you pass the modern Seaton Castle, with the ruins of its predecessor and of the beautiful chapel, delineated in Billings's "Ecclesiastical and Baronial Antiquities of Scotland," and not far off you catch a glimpse of a stately archway leading to the demesne of the Earl of Wemyss. This gateway was designed by Mr. Billings, and, like most of his works, it is peculiar. It was by some facetious person dubbed "Billingsgate." Here the train leaves the main line, and in five minutes more the traveller is landed at the west end of the ancient and royal burgh of Haddington.

The first object that engages the attention on entering the town is a monument in the form of a (not very lofty) Doric column, surmounted by a statue cut out of blue whinstone, and having four life-size figures in freestone of mourners at its base. This monument commemorates Mr. Fergusson, of Raith, sometime member for the Haddington district of burghs, and a most popular landlord. To the south of this monument the "Knox Memorial Schools" are in course of erection. They embrace a primary and secondary school, are to cost 10,000*l*., are Gothic in style, and are designed by Mr. Starforth, of Edinburgh. The style adopted is hardly appropriate for a memorial to the

great leveller of Mediæval observances. The principal streets of the town (which contains a population of about 4,000), are spacious and well kept, and the houses are of a good class, mostly modern, and without architectural features worthy of notice. The public buildings consist of the Court-house, in the Tudor Gothic style, from the designs of the late Mr. Burn. Beside this stands the Corn Exchange, designed by Mr. Billings, having an exterior which sufficiently declares its purpose. The Town-house is a fair example of the Georgian period, and has a lofty spire in keeping therewith, designed by the late Mr. Gillespie Graham.

The chief attraction of the place is the abbey church, *Lucerna Laudoniæ*, the Lamp of Lothian, so named from the circumstance that a lamp was kept constantly lighted which was visible from a great distance. The structure must have been a fine one, and is thus described by Fordun as it existed in the fourteenth century:—"Opus certè quod sumptuosum erat, ac totus patriæ illus solatium singulare, cujus chorus quidem ob luminis claritatem, Lucerna Laudoniæ vocubatur." The choir and transepts are in a state of ruin, but the nave is kept in repair, and is used as the parish church. The total length is 210 ft., and is uniform in style throughout, with the exception of two four-centred doorways inserted in the nave at the beginning of this century. The tracery of the aisle and clearstory windows is not varied, and shows the pear-shaped openings so frequently met with in Scottish ecclesiastical buildings. Another characteristic feature is the west doorway, which is semicircular-headed, and subdivided into two openings, formed by round arches supported by a clustered shaft, the cap of which exhibits the emblems of the Passion. The tracery of the west window is very massive, and in the transepts and over the high altar the windows are lofty, but the tracery is gone. The crowning glory of the abbey is the central tower, 90 ft. in height, which appears to have been surmounted by an open canopy of flying buttresses, as at St. Giles's, Edinburgh. When in its original condition, it probably excelled all similar towers in dignity. The situation of the abbey is very pleasing, for here the still waters of the Tyne curve round the churchyard, and beyond lies the suburb of Nungate, in which stands the house where the great reformer first saw the light. Before leaving the precincts, however, we remark that in a locked-up enclosure in the north aisle of the ruined choir is situated the burial-place of the Lauderdale family, where lie the remains of the first Duke who ruled Scotland with a heavy hand. The tomb contains alabaster monuments with recumbent figures in a somewhat dilapidated condition. In the churchyard rest the ashes of the wife of Thomas Carlyle, who was a native of the town. The tombstone bears the following inscription:—

"In her bright existence she had more sorrows than are common; but also a soft invincibility, a clearness of discernment, and a noble loyalty of heart, which are rare. For forty years she was the true and ever-loving helpmate of her husband, and, by act and word, unweariedly forwarded him, as none else could, in all of worth that he did or attempted. She died at London, 21st April, 1866: suddenly snatched away from him, and the light of his life as if gone out."

Here also may be seen the burial-place of the family of Mr. Samuel Smiles, the author of "Self-Help," &c. His parents were highly respectable, and kept a shop in the town. Samuel was educated to the medical profession, and after obtaining his diploma pitched his tent in his native town, but there a prophet hath no honour until his merit is recognised elsewhere.

When leaving the churchyard by its eastern gateway, you observe in front a stone structure of about 30 ft. in height, in the form of the letter H, but with the connecting band greatly elongated; the whole exhibits a surface of dead wall, and the spectator is puzzled to make out the purpose of it. This is the "ball-alley," where the game of hand-ball used to be played, but now it appears the game is not so much in favour as of old.

Passing onwards, across the old and narrow bridge which spans the Tyne, the suburb of Nungate is reached, where a convent of Cistercian nuns once existed, hence the name. A small ruin of a very rude type of architecture still exists to show the locality of the ancient foundation. In the Gifford Gate of Nungate, a house, with its gable towards the street, and having an outside stair leading to the upper story, is pointed out as the birthplace of John Knox. The village of Gifford, about four miles distant, sometime claimed the honour of being the place of birth of the Reformer, but it is now established beyond doubt that the Nungate of Haddington is the spot, and it is even hinted that the village of Gifford did not exist in his day. Another remarkable house in the town is situated near the north-east port; it belonged to the Earl of Bothwell, and in it the Earl and Queen Mary rested during their flight to Dunbar.

Haddington is a town of great antiquity, and from its vicinity to the Border has been the scene of many conflicts. As is not unfrequently the case, the derivation of the name is a subject of dispute amongst antiquaries. By some it is presumed to have been the place of settlement of a Saxon chief named Halden, or Haden; others have derived the name from Ada, the daughter of Earl Warren, who was married in 1139, to Henry, son and heir of David I., as this territory was settled on her, "but this etymon, we suspect, is advanced without the consideration that the name of Hadintun, the Hadina of Cambden, and the Hadintona of Fordun, was in use when this lady entered into possession."

David I. occasionally resided in the burgh, having a church, a mill, and other appurtenances of a manor. Ruined vaults of considerable extent had to be cleared off the site where now stands the county buildings, and these tradition pointed out as belonging to the Royal residence.

In the year 1178 Ada founded a convent of Cistercian nuns upon her lands, which was consecrated to the Virgin, and endowed with lands of considerable value. The manors and wealth of the convent afterwards excited the cupidity of the neighbouring barons of Yester and Mackerston, who violently took possession of certain lands called the Nunhopes, and retained them until compelled by Parliament to restore them to the nuns. In this convent the Scottish Estates, under Arran, met in 1548, and gave their consent to the marriage of the youthful Queen of Scots with the Dauphin, and resolved on sending her to France to be educated.

On the death of Ada, Haddington became the property of her son William the Lyon, and here, in 1180, he convened a conclave of clergy and laymen to settle a dispute between the monks of Melrose and Richard the Constable, regarding certain manorial rights in Roxburghshire.

In 1198, Alexander II. was born in Haddington, and during the reign of that sovereign, who had taken part with the English barons against King John, the latter in 1216 burnt the town. In 1244, the town was again destroyed by fire accidentally, and about 200 years ago it met with a similar fate from a nursery-maid having left a clothes-screen too near a fire during the night. As a warning against such negligence, the magistrates directed the following curious rhyme to be recited at dusk by the town crier, a custom only abolished recently:—

"A' guid men's servants whae e'er ye be,
Keep coal an' canle for charitie.
Baith in yeer kitchen an' yeer ha'
Keep weel yeer fire whateer befa'.
In bakehouse, brewhouse, barn, or byre,
I warn ye a' keep weel yeer fire;
For oftentimes a little shark
Brings mony hands tae muckle wark;
Ye nurrices that hae bairnes tae keep,
Take care ye fa' na o'er sound asleep,
For losing o' yeer gude renoun,
And banishing frae this burcs toun.
It's for your sakes that I do cry,
Take warnin' a' ye neebours bye."

Besides being devastated by fire the town had also to contend against the element of water, as from its position on low ground at a bend of the river it was liable to be flooded. During one of these inundations, it is related by Bowmaker (the continuator of Fordun), that upon the waters approaching the convent a nun snatched up the statue of the Virgin, and threatened to throw it into the water unless she interceded for the protection of the building, "and from that moment the river retired, and gradually subsided within its limits."

Again, at the feast of St. Ninian, in 1421, the waters rose and swept away many dwellings, and the sacristy of the abbey and its appurtenances were greatly damaged. The last great flood occurred on October 4th, 1775, when the Tyne rose seventeen feet, and inundated half of the town, but, as recorded upon a tablet in serted at the angle of a street, "by the mercy of God no lives were lost." This flood is supposed to have been caused by the bursting of a waterspout in the Lammermoors.

From its situation near the Border, and on the direct route to Edinburgh, the town was liable to be attacked, and accordingly it was surrounded by walls of considerable strength, and had embattled ports guarded by cannon. These have now disappeared, with the exception of some fragments of the wall retained as boundaries to gardens.

Before the era of railways, Haddington, being on the route from Edinburgh to London, was enlivened by the passage of the mail and stage coaches, besides private and hired carriages; but now its aspect is sleepy, although it exhibits considerable animation on Fridays, on which day the weekly market is held. This was at one time the largest corn-market in Scotland, and is yet only second to that held in Edinburgh.

Several attempts have been made to establish woollen manufactories in the town, for which its situation seems well adapted, but those attempts have been unsuccessful. The town, until recently, was not in a good sanitary condition, and suffered severely when cholera visited this country, but now a supply of water has been introduced and a system of drainage laid down.

FANS AND FAN-MAKING.

From time to time during the past fifteen years, it has been our pleasure to record the resuscitation of several of the wealthy trading guilds of the City of London, who, after a lapse of a period the memory of man faileth to remember, have once more taken up their rightful position as overseers and encouragers of the crafts representing the names they bear. And yet the apparent indifference to the trading interests was not in every case the company's own fault. The privileges granted by the old charters have been from time to time superseded by modern Acts of Parliament, and these Acts, promoted by persons opposed to the companies, have, in very many cases, been passed against the wish of the guilds, and have too frequently, we regret to say, been against the interest of the very trades which the Acts were supposed to benefit. The real use of a company's supervision cannot be better illustrated than in the useful rights of search, &c., which the Fishmongers' Company carry out at the present time in the City markets.

When the Ironmongers' Company held their magnificent *Conversazione* in 1861, and the Painter-Stainers and Coachmakers inaugurated their Exhibition of Decorative Works specially connected with their trades, the dawn of a reform appeared, and since that date many other of the companies have also done the like, the last two on the list being the Tin Plate Workers and Fanmakers,—and the exhibition of the latter last month at the Drapers' Hall will long be remembered as a most successful and pleasing event in the history of that guild. So much interested have we been in the display that we began to look up a few notes relating to the "Art, Trade, and Mystery"; and these, after some researches, proving of more than ordinary interest, we think our readers will not object also to know something about one of the most extensive and fashionable trades now carried on throughout the civilised world.

It may be a fact unknown to a great many of our readers that the fan has flourished as an article of use for upwards of 3,000 years. The Egyptians painted it on the walls of Thebes, and Pharaoh is represented as surrounded by his "fan-bearers." And yet it is curious that in the few instances where the fan is mentioned in the Holy Scriptures the article is alluded to as of mechanical use, and not for cooling the atmosphere around us. It is a very interesting fact, however, that the ancient fan,—"flabellum,"—was a most necessary article with the Egyptians, Romans, and Grecians,—the vases of the latter showing figures using them,—although the fan of early days was not like that of our time: it was a somewhat ugly-looking instrument, with a very long handle, which must have borne a likeness to the Indian punka. When the Romans were at their meals, the slaves were hard at work cooling the atmosphere and driving away the flies, as is more particularly set forth in the Classical authors' works. In China and Japan the fan has ever been a most necessary part of dress. Whoever saw a China-

man without his fan? And they are now the largest exporters, the fans being manufactured of ivory, bone, bamboo polished and japanned, and paper covered.

The ancient "flabellum" was an important article in the office of a deacon of the Greek Church. We are told it was made of peacocks' feathers, of fine parchment, or of palm-leaves, fixed at the end of a handle of wood, circular in form, some having small bells attached. After the fourteenth century it ceased to be used in the Romish Church ceremonies; but in modern times the sovereign Pontiff has two carried before him. There are only two of these fans known to exist, and these have been described by the late Mr. Holt. One, in the Treasury of Monza, which is ten miles north-east of Milan, belonged to Thêodelinde, queen of Anthoris, king of the Lombards, and who became his widow in A.D. 593,—that is, 1,285 years ago. It is made of a long and narrow strip of leather, folded screen-fashion, the pleats being united at one end by a string. It was once ornamented and gilded, and there is an inscription upon it, which is not now decipherable. The other fan is of a different character, of ninth-century date, and one of the relics from the Abbey of St. Philibert, at Tournus, in Burgundy, and now is, or lately was, in the possession of a celebrated Lyons collector. It is made of parchment, with a bone handle, of cylinder form, and in sections. On the capital is placed the stock of the flabellum, formed of a rectangular box of plates of bone, fastened together by bands. On the handle are represented vine-leaves and birds, and on two of the bones is inscribed,—S . M . RIA . S . AGN . S . FILIB . JOHEL . ME . FECIT . IN . HONORE . MARIÆ. On the four sides of the capital are figures of the four Apostles. The parchment is folded into pleats, opening in a circular form, ornamented on both sides with foliage, saints, &c., and an inscription in letters of gold. The flabellum is mentioned in the old inventories of "the goods and chattels" of many priories and abbeys, especially Salisbury, Rochester, Southwold, York, and St. Paul's, London; and it is to be found in the inventories of Clemence, the daughter of Charles I. of Hungary, and queen of Louis X., who died 1328, and Isabella, the daughter of Philip the Fair, who married, in 1307, Edward II. of England.

The fan was used in England in the reign of Henry VIII.; for there is an anecdote told of Sir Thomas More having castigated his daughters with a fan made of peacocks' feathers, for the grave crime of running up a milliner's bill. Two suggestive thoughts arise out of this note: the first, was the thrashing done with the feathers or the handle, then commonly half a yard long; and, secondly, how many daughters and "children of larger growth" deserve chastisement to-day for a like offence? If fashion has brought about an improvement in the fan, it cannot say it has brought with it in every case improvements in dress or studied economy.

Queen Elizabeth was a great lover of fans, and at her death no less than twenty-seven were found among her articles of dress. In 1578, exactly 300 years ago, she dropped one with a silver handle into the moat of Hawstead House, in Suffolk, she being then on a visit to Sir William Drury. In 1589, Nichols tells us, Sir Francis Drake presented her with a new year's gift, "a ffanne of ffethers white and redd, the handle of gold, enamelled with a halfe moone of mother of perle, within that a halfe moone garnisht with sparkes of dyamonds and a fewe seede perles on the one side, having her Majestie's picture within it, and on the other side a device with a crowne over it." Now, the Queen was very fond of receiving gifts, and the wonder to us is where she stored them, for the majority of them were of enormous value. Among the Sydney papers we find a letter describing her visit to Sir John Puckering, the Lord Keeper, at Kew, in December, 1595. Of course he made her some acceptable presents, and these are briefly summed up thus:—"On her first lighting she had a fine *fanne*, with a handle garnisht with diamonds. When she was in the middle way, betweene the garden-gate and the house, there came running towards her one with a *nosegay* in his hand, delyvered it unto her with a short well-penned speech; it had in yt a very rich jewell, with many pendants of unfirled diamonds, valued at four hundred pounds at least. After dinner, in her privy chamber, he gave her a faire paire of *virginals*. In her bed-chamber he presented her with a fine *gowne* and a *juppin*, which things were pleasing to her Highness, and to grace his lordship the more, she of herself tooke from him a *salt*, a *spoone*, and a *forke* of faire agate." A portrait of the Queen, with one of her fans in her hand, will be found in Abraham Darcie's "Annales" of her reign, published in 1625. We also see the feather fan in the portraits of Anne of Denmark, queen of James I.; of Dorothy, the wife of Richard Cromwell; and in Hollar's portraiture of the Lady Mayoress of London, in his "Theatrum Mulierum." The portraits of other ladies of quality during the same periods, also exhibit the fan,—for it must be borne in mind it was an article of dress of no slight value, an ordinary one costing not less than 40*l.*, and ostrich feathers being used instead of peacock's, handles were chased and jewelled, while some had small looking-glasses inserted, as will be seen in the accounts of Eleanor of Austria, queen of Francis I. of France. These fans were suspended from a chain of gold.

During the reign of James I. men began to use fans, and these were often of extraordinary size, with handles corresponding. Aubrey, in one of the Ashmolean MSS., tells us that "Sir Edward Coke, Lord Chief Justice, rode the circuit with such a fan; Sir William Dugdale told me he was an eye-witness of it. The Earl of Manchester also used such a one; but the fathers and mothers slasht their daughters in the time of their besom discipline, when they were perfect women"! We must, therefore, suppose these noblemen used these fans to protect them from heat and flies while riding abroad, and as a correcting-rod for their children at home.

Both Skakspeare and Milton speak of the fan, the former in not very hearty praise. Bishop Hall alludes to it as used by a fashionable gallant, "to shade thy chalked face"; Greene, in his "Farewell to Folly," 1617, speaks of "bearing plumes of feathers in our hands, which in wars our ancestors wore on their heads"; Davenant, in 1649, says in his "Love and Honour," "All your plate vases are the silver handles of your old prisoners' fans,"—an imputation by no means complimentary; while the old diarist Evelyn, on May 22, 1664, notes that Tomson, a Jesuit, had showed him a wonderful collection of varieties sent by the Jesuits of Japan and China for the house of their order in Paris, and many of them were "fans like those our ladies use, but much larger, and with long handles curiously carved and fitted with Chinese characters." The increase in the importation of fans during the reign of Charles II. caused a duty of 40s. per dozen to be charged on those of foreign make, and the prohibition of those painted.

The eighteenth century brought about many changes in "the art and mystery" of fan-making, especially upon the incorporation of the City Company, while the article itself became more interesting in another way, Addison taking up the cudgels against the use it was put to. This use was designated "the art of fluttering," which took, on an average, three months to learn, but then a good practitioner was able to use the fan in an assembly, by which one well up in the secret could tell an "angry flutter" from a "timorous flutter," a "modest flutter" from an "amorous flutter," and, in fact, any other kind of "flutter." As the fan was then made about a yard wide, it is to be easily understood the peculiar use it was put to, and not only, be it said, to screen the object using it. But our country was not the only place which carried fan-flirting to extremes,—Spain, Portugal, and Italy were equally famous.

The next step in fan-making was the painting of the fan-mounts. Some of our best painters and designers worked at the art,—among them West, Reynolds, Cipriani, Bartolozzi, &c. At the late exhibition at Drapers' Hall were fans with subjects illustrating the history of Scipio, the Nursing of Cupids, Venus arising from the Sea, the Judgment of Paris (of which there were three specimens,—one having been the bridal fan of Lady Shelley in the middle of the last century), the Seasons, pug-dogs, Venus and Adonis, French armorial, the alliance between France and Austria, trial of Warren Hastings, &c. In topography were views of the Garden of Eden, eruption of Mount Vesuvius, the temples and other views of Rome, Margate (in 1798), St. James's-square, Windsor Castle, and a plan of the King's Theatre in 1788. This latter reminds us that at that period "the opera fan" was among those advertised:—"These fans present at one view the numbers of boxes, including the additional ones, with the names of the subscribers, &c." When Swift's "Gulliver's Travels" appeared in 1726, the fans immediately illustrated that popular book; so also the equally popular "Beggars' Opera,"—that remarkable play which made "Gay rich, and Rich Gay,"—Gay being the author, and Rich the proprietor of the theatre in Portugal-street. A writer in the *Gentleman's Magazine* for 1753 gives a curious list of twelve varieties of fan-painting, "elegantly executed, which at a late celebration of the Communion in a certain church of this metropolis were actually displayed by way of screens to so many pretty faces disposed in a semicircular arrangement about the holy table," and among them were:—The Humours of Change-alley, the Judgment of Paris, Vauxhall Gardens, and the Prodigal Son with his harlots, copied from the "Rake's Progress," by Hogarth. The writer justly questions whether they were suitable "to the original design of that sacred rite at which they assist on these occasions," and argues "whether, if our British ladies are too nicely modest to worship God with naked faces, they should not return to the ancient simplicity of a plain linen or sarsenet veil, after the manner of the Jewish females." Perhaps that called "The New Church Fan" of the latter end of the last-century make, in Mr. Sandell's Collection, and painted with the Ten Commandments, was one of the most suitable for a place of worship at that date of loose manners. In 1750 a poetical essay commenced:—

> "Mira! take this painted fan,
> Of it make the most you can;
> When it rises, full display'd,
> To supply the cooling shade,
> Read these maxims, there exprest,
> Shade for man is sometimes best!"

And about the same date the ladies of the stage adopted the fan for two useful purposes,—the first was to cool the atmosphere around them, and the second was to use it as the "prompter" in the delivery of addresses.

Finally, the artistic manufacture of fans has improved during the past 100 years (whatever may be its actual position at the present moment),—the late exhibition gave ample proof of that. Formerly of feathers, some by no means small, with long handles; then of parchment, canvas, and paper; and, finally, of lace, the old fan has become a light and handsome article, and not without its use; but the old circular shape is now fast becoming a thing of the past. At the same time, in our importations, as in other articles of commerce where "free trade" and "trade unionism" have produced two great impediments to our progress at home, the manufacture of fans began visibly to decline at the latter end of the last century. In 1751 a writer in the *Westminster Journal* proposed a tax on plain fan-mounts, which he calculated would produce between ten and thirty thousand pounds a year, and would only injure "about half a dozen paltry plate-printers, who are enriching themselves, and starving hundreds"; and in the next year the *Daily Advertiser* announced that one thousand poor artificers in fan-making returned their best thanks to the Fanmakers' Company for petitioning the East India Directors to discontinue the importation of fans, and at the same time the ladies were asked to remember their own countrymen, and relieve distress at home before thinking of those abroad! Verily, this is a hint worth noting in this philanthropic nineteenth century.

And now for a brief notice of the City Guild. Upon the application of persons of stability of the trade, Queen Anne, on the 23rd of October, issued her sign-manual, and, on the 8th of December, 1708, through her Lord Treasurer, Godolphin, her docquet, warranting the incorporation of a company to be called "The Master, Wardens, Assistants, and Society of the Art or Mystery of ffan Makers in the Cities of London and Westminster, and Twenty Miles round the Same;" which charter was duly granted on the 19th of April following. Among other things, it granted the company *perpetual succession*, a common seal, the right of suing, to have a master, two wardens, and ten assistants, annually to be elected; a clerk, beadle, &c. That no person from henceforth shall exercise the said art, either in the whole or respective parts thereof, unless he has served an apprenticeship of seven years to a member or is a member of the said company. And all those exercising the art must join the said company within three months after the date of the charter. The com-

pany may proceed against any one offending, and justices are ordered to aid them therein.

This charter was duly enrolled at Guildhall on the 5th of October, 1710, and the company's bye-laws were confirmed by the Lord Chancellor and Judges on the 20th of February, 1741-2. Among these bye-laws is a direction as to payment of a quarterage, powers of search, &c., showing the society then *practically* existed. In fact, a few years later there were several prosecutions against "strangers,"— that is to say, those making fans not members of that company. In June, 1806, the guild were granted a livery of sixty members, and, according to their own return to the Commissioners, 333 persons took up their freedom in the company between the years 1813-33. Not having a hall of their own, they transact their business at Guildhall. Their arms are emblematical: *or*, a fan displayed with a mount of various devices and colours, the stick *gules*; on a chief per pale *gules* and *azure*. On the dexter side a shaving-iron over a bundle of fansticks tied together *or*; on the sinister side a framed saw in pale of the last. The crest is,—on a wreath a hand couped proper holding a fan displayed *or*. Their motto is, "Arts and Trade United."

Finally, will Mr. James Curtis, the hon. secretary of the late Exhibition, pardon us if we reproduce his poetic acrostic?

TO H.R.H. THE PRINCESS LOUISE.

T o thee, Princess, these lines we raise,
H eartfelt in tribute of our praise,
E ncircling thee our art to grace.

W hen first the fan to England came,
O nly 'twas used by high-born dame;
R enowned so much among the fair,
S anctioned by these the *débonnaire*.
H istory relates with truthful vein,
I ts advent in the Tudor's reign;
P lebeian ladies donn'd the fan,
F rolicsome grown under Queen Anne;
U nique in style, by art refined,
L o! Watteau then doth charm mankind.

C onsider now the wondrous skill
O f Diaz and Gavarni's will;
M ake mention, too, what prose has done,
P ortray'd by Steele and Addison;
A nd Gay and Pope alike in verse
N ew glories of a fan rehearse;
Y our meed of praise accord, ye Belles,

O ft echo what Maréchal tells.
F luttering with youth, for evermore,

F lourish the fan from shore to shore;
A ndalusia, China, and Japan,
N ot less than France or Hindostan;
M indful of this, our charter'd art,
A cknowledge to have play'd their part,
K now that 'tis now our chief desire
E ngland with love of fans to inspire:
R oyalty thus, through thee, Princess,
S miled, and became our Patroness.

Of "makers" of fans in Paris, there were fifteen in 1827, who employed over 1,000 hands, and twenty years later, 122, who employed 575 hands. In London, this present year, the actual number set down in the Directory as fan-makers is thirteen only, principally French; but it must be borne in mind there are fan-makers incorporated in other trades, therefore the Directory is not always the most correct summary. As the trade, however, shows evidence of a revival, let us hope it will continue to prosper "root and branch, and may it flourish for ever!"

THE IRISH BOARD OF WORKS AND NATIONAL MONUMENTS.

We have already in the *Builder* given a sketch of the general duties of the Board of Works of Ireland, and shown how extensive and important these duties are, and have also noticed some of the proposals of the late Departmental Committee, by which the staff of the Board will be strengthened, and their duties more efficiently performed. We propose now to touch upon certain of the works which fall to the lot of this Board, since there can be no question that it is of paramount public importance that the investigations of the late Committee should not be allowed to fail in causing the improvements which they were intended to produce in this body.

We have lately in England heard a good deal about the preservation and the restoration of ancient monuments; we have seen Sir John Lubbock, one of the ablest and most practical men of the day, labouring to preserve those monuments which this nation still possesses; and we have seen advocates and opponents of restoration state their case, and cross swords in literary argument.

Meanwhile, in Ireland there has to some extent sprung up a kind of national supervision of a number of national monuments and ecclesiastical ruins. By the 25th section of the Irish Church Act of 1869, the Temporalities Commissioners were empowered to hand over for future repair and maintenance to the Board of Works the ruins of ecclesiastical buildings and other ancient structures of national or historical interest. Thus very nearly ten years have elapsed since the Board of Works became the guardians of the chief ecclesiastical buildings of antiquarian interest in Ireland, and in that period fourteen national monuments have been vested in the Board, and a sum of 22,000*l.* has been also handed over for the purpose of their maintenance and preservation. At the time when the Committee was engaged in taking evidence for the purposes of its report, the Church Commissioners were about also to transfer 100 more structures, and at the same time, a further sum of 30,000*l.*, for the purpose of preserving and maintaining these additional structures. But, on the other hand, though there may be 114 buildings now under the control of the Board of Works, it is estimated by the Assistant Commissioner of that body that there are at least 1,000 more monuments in Ireland which it would be desirable to preserve. According to his account, there were originally from 1,200 to 1,300 monuments of national interest; the Board selected 130 of the most important, and the Church Commissioners reduced this list to the present number, 114. But if the chairman is right in his estimate of the number of such ecclesiastical monuments which it would be desirable to preserve, it is obvious that there are a large number more which should be placed under the control of the Board of Works since the Government and Parliament have seen fit to make that body the guardians of the Irish buildings of national interest and importance. But, with the mass of work which has to be performed by the Board, it is not very likely that it is particularly anxious that its duties should be increased, for, of course, every additional building placed under its care increases its labour without any corresponding increase of pay or reputation to the members of it. But, nevertheless, there can be no possible doubt that since the Board is now the authorised guardian of national buildings in Ireland, no time should be lost in ascertaining whether the one thousand and odd buildings are of such a nature that they also should be placed under the care of the Board. Since, however, the Board derived its information of the value of these buildings from the several county surveyors, it is no disparagement of these officials to suppose that in all probability the number of really valuable buildings is less that 1,000. But be this as it may, it is clearly time that the character and importance of the buildings which we have specified should be definitely ascertained by thoroughly experienced and learned persons. There is, of course, also this further fact to be considered,—that in many cases the interests of private persons are concerned in these buildings, and that therefore it is by no means certain that in every case the consent of such persons can be obtained for the transfer of some particular structure to the Board of Works. We have assumed, it will be observed, that it is desirable that all buildings of national importance should be handed over to the Board, since Parliament has constituted it the caretaker of ecclesiastical monuments. But we are by no means, from the facts shown in the report before us, prepared to admit that the Board of Works is a particularly efficient body for the purpose. For the Board do nothing in the way of restoration that can possibly be avoided, and only make absolutely necessary repairs. The repairs are superintended by Mr. Deane, architect, and he is the only person who practically has any supervision over these important buildings, as the following question and answer by the assistant commissioner sufficiently show:—(3,081.) "In repairing or preserving has any member of the Board visited the monuments, other than the architect in special charge?" "I have done so, and the chairman has also done so, upon some occasions." But though both the chairman and the assistant commissioner are men of ability and business knowledge, it would be quite too much to expect that, having regard to their endless duties, loans to railways and landowners, superintendence of harbours and inland navigation, tramways and land improvements, they could possibly do more than acquiesce in whatever work it had seemed good to the architect to order. Then, again, it is somewhat significant that the members of the Board have had no communication whatever with the Archæological Society in respect to these buildings, and there is no information that they have consulted with any persons of great architectural experience in regard to them. This is how they explain the manner in which the 22,000*l.* were to be spent:— (3,088.) "The way we dealt with the 22,000*l.* handed to us was this: we had an estimate prepared of what it would cost to put each monument in a proper state of repair; and we also had an estimate made of what would be the probable cost of maintaining it in that condition; also the cost of the necessary caretaker to attend it. The annual cost of these caretakers and of maintaining was capitalised, and the amount invested in Government securities, in which way a fund has been provided for maintaining these works. The amount of money immediately necessary for putting the monuments in such a thorough state of repair as would admit of their being preserved we have held in hand for the purpose of doing the work,—investing it in securities and drawing it out as we require." We have no adverse criticism to make upon the financial arrangements here set forth; but we think that it becomes more obvious, from a perusal of this answer, that the whole control of the national ecclesiastical monuments in Ireland is entirely under the control of Mr. Deane, of Dublin. Of Mr. Deane's qualifications for a task of national importance we have no information given us; but knowing, as we do, that he is an architect of skill and experience, we still venture to think that duties of such extreme importance should not be left completely under the control of one person.

Some arrangements should have been made whereby the opinion of persons well known in England and Ireland for their knowledge of ancient architecture and their study of what may be termed restorations, should have been obtainable. No doubt things run most smoothly under the management of a single mind, but we assert that the repair, the restoration, and the maintenance of the ecclesiastical monuments of Ireland should not be left wholly to the will of one person. The Board of Works has, in fact, delegated its functions in this respect to a third person, and when it was intrusted with the custody of Irish ecclesiastical monuments, and when such large sums of money were placed in its hands, Parliament must certainly have intended that the highest professional services in Great Britain should have been obtained when needful.

Before, therefore, further restorations and repairs are continued or commenced, it would be highly desirable in the interests of architecture in Ireland that some measures should be taken to review the manner in which this work has hitherto been performed, and to take steps that it shall be thoroughly fulfilled in the future. This, and also the question of the number of buildings which are worthy to be considered Irish national ecclesiastical monuments, are two subjects which cannot too carefully be considered by all well-wishers of architecture in Ireland.

INTERIOR ECONOMY OF THE OFFICE.

Of course there are many exceptions, but, as a rule, the interior economy of his office is, with an architect or engineer, generally the last thing to be regarded, and the strange anomaly exists of the surroundings of a man, whose daily business should teach him to value, more and more, order and regularity, being little less than a scene of indescribable confusion and chaos, where the right plan, letter, specification, or document is never to be found when wanted, and where, in endless search and re-search, hours, which in the aggregate cannot but form a large item in the professional life of a man, are literally thrown away, involving pecuniary loss and trial of temper, not only to himself, but in a great measure to his clients also.

Tot homines tot sententiæ: every architect or engineer who confesses to laxity in the matter of interior economy will have some different reason to adduce. One will plead press of business; a second the non-importance of such petty detail; a third, like Felix the governor, will attend to these things at a more convenient season; while a fourth, born and reared, so to speak, in the midst of chaos, cannot possibly conceive what there is to alter or amend!

Seriously speaking, however, the continued

maintenance of a thorough system of order and regularity in the business establishment of an architect or engineer cannot but be of the utmost importance, enabling as it does the rich store of letters, notes, memoranda, specifications, plans, and designs that have accumulated since the first starting of the business, to be laid hands on in the briefest time, and any required instruments, drawing materials, paper, &c., to be obtained at a moment's notice.

Who is more likely to do his clients justice and reap his own reward, than the professional man who, as engineer, architect, or surveyor, can, in a moment, produce any memoranda, letters, or drawings bearing on any required subject that have, in the exercise of his profession, accumulated in his office possibly during very many years, and can save them the cost and himself the toil and trouble of rereading-up, re-writing, re-planning, and re-drawing; or what better legacy can such a man leave his son or other successor in his business than a well-ordered office, where the experience of a lifetime is ready to the hand?

There would appear to be three chief rules to be observed in those offices where proper interior economy is aimed at, and which may be enunciated as follows:—

I. No letters, memoranda, or documents of any kind should ever be issued without copies, *fac-simile* if possible, being carefully retained.

II. No letters, memoranda, or documents received of any kind whatever, except unimportant printed matter, should be destroyed.

III. No plans, drawings, or designs should ever be issued without office copies being retained, each having the proper title, date, scale, north point, &c., duly marked thereon, also, in most cases, the draughtsman's name or initials.

In the present day, the first of these rules is one which, by means of the easily-managed copying-press, most men observe, the exceptions being generally M.P.s and clergymen who make a boast of never keeping copies of their letters.

There is no accounting for the pegs that humanity will attempt to hang its pride on. One man will boast he never spent a penny without duly recording the fact, another that he never yet kept accounts! One will boast he never was ill in his life, another that he has had all the illnesses under the sun; but while many may be found to scorn taking copies of their correspondence, more will be found of the contrary opinion. And we may, therefore, take it that the importance of Rule I. is everywhere generally recognised. Care should be taken to have the "Letters-issued" Book posted up at frequent intervals, and, when finished with, duly labelled with date of commencement and end, and relegated to some convenient shelf or cupboard, to be at some future period removed to the upstairs regions to await in peace, with others, the references that sooner or later will assuredly be made.

We cannot expect Rule II. to meet with so general an acceptance; our professional readers will probably exclaim at the bare idea of actually *keeping* the MSS., &c., that daily reach them by post or otherwise; and yet there is not one of us that has not over and over again deeply regretted the destruction of some letter that, at the time, seemed most unimportant.

The objection to Rule II. will probably be found to arise from the difficulty of filing and keeping, in anything like regularity, the variously-sized, shaped, and executed letters, &c., that are received. The "Letters-issued" Books can be shelved readily and easily enough, and readily and easily resorted to, but with "Letters Received" it would seem to be different; and, where they are kept, reference to the bulky and unmanageable packets, tied in the centre with tape or string, is always troublesome and tedious!

The use of Marston's Patent Letter-case (J. Heath, Birmingham) does away with almost all the difficulty alluded to. One of these cases, endorsed with the year and some distinctive letter of the alphabet, lies on the office table, and in it every letter as it arrives is duly filed. As each letter is answered the date of answer is marked on the same with a coloured pencil or otherwise. The case, when filled, is supplied with an index, and (its place being taken by another marked with a consecutive alphabetical letter) is then treated in the same manner as a completed "Letters-issued" Book.

In dealing with these "Letters-received" Books, as these cases really become, there are two points to be more particularly attended to, viz., the mode of "filing" and the mode of making a suitable index.

Of course, where there is a blank leaf or good margin to the "letter received" the filing is easy enough, otherwise it is necessary to keep at hand a number of strips of paper, each having a pair of arrow-heads projecting from one side. By folding in the barbs of these arrow-heads, they (the heads) can be inserted through two corresponding slits cut with a sharp penknife in the letter itself, which, on the barbs being unfolded, is held fast, and can, by means of the artificial margin thus afforded, be easily bound in the patent case.

Fly-boxes, as made by schoolboys, form a good instance of the application of the arrow-head fastening, and nimble fingers and a pair of scissors can produce in a few minutes a large quantity of these artificial margins.

One great advantage of the artificial margin is, that the letter can be removed from the book most easily, and replaced at any time in its original position without disturbing the other letters.

The indexing of the "Letters-received" Book is best managed as follows:—

After the case is filled, three or four half-sheets of lined foolscap are bound in, divided into columns under the headings of "Number," "Name," "Date," "Subject," "Purport," "Date of Reply," respectively, and each letter being numbered consecutively from the commencement of the book, the index pages are filled up accordingly. In addition to the index pages in each "Letters-received" Book, an Index Book will be required, formed entirely of index sheets similar to those of the ordinary "Letters-received" Book. In this Index Book the name of every correspondent, with his address, is alphabetically inserted, and in the appointed spaces opposite the name are inserted the alphabetical letters by which the books are distinguished, conjointly with the numbers with which the letters themselves are marked.

Thus, if John Brown, Esq. writes to the effect that the farm buildings you designed for him the year before last, have leaked greatly during the recent heavy rains, and that he cannot recollect having authorised you to use any but the very best tiles, you have only to turn to the Index Book, where, under the letter B, you find Mr. Brown's name, and opposite it somewhat as follows:—

1876. A/14. A/24. B/32. C/38. C/39.
1877. B/21. D/25.
1878. H/10. &c.

Sending for A B and C "Letters-received" Books of 1876, you turn to their index pages, when a glance at the purport columns of Nos. 14 and 24 in A Book, 32 in B Book, and 38 and 39 in C Book, should show you at once in which letter your client ordered the tiles in question, and the pencilled date of answer on the same will enable you, without hesitation, to turn to the "Letters-issued" Book, and see your reply.

Every one, we presume, will allow the importance of Rule III., and there remains but to be pointed out the best means of keeping such plans, drawings, and designs, in such order that when any one in particular is wanted it shall be immediately forthcoming.

Plans and drawings, necessary as they are, are generally a nuisance, they cannot be packed away like books in a library,—as can both "Letters Received" and "Letters-issued" Books, nor can they often, from their size, be placed in ordinary drawers or portfolios; their fate is, therefore, as a rule, to repose in cupboards and on shelves, where, buried in an ever-increasing thickness of dust, they await the sharp attacks of mice, or the more insidious ones of damp and mildew.

The best system to adopt is to roll up all plans and drawings and dispose of them in the attics, &c., much as bottles of wine are disposed of in the new-fashioned and most sensible iron bins.

The "plan-bin" should, however, be of wood, in the shape of a pair of light parallel frames of "square" trellis-work, ranged round the room, and reaching from floor to ceiling, the inner frame being some 2 ft. or so distant from the wall. Each of the inexpensive skeleton pigeon-holes thus formed is numbered, and affords a most convenient receptacle for a similarly numbered plan or drawing.

A bundle of common rollers should be kept at hand, rolled round one of which a plan, that in itself would not be long enough, can be securely kept. Auctioneers numbers, which are sold on gummed paper in sheets of a hundred, answer capitally for numbering the pigeon-holes, and indeed these numbers skewered in readiness on a long pin or wire, can be used advantageously in numbering the letters in the "Letters-received" Book.

A Plan Index Book will be required, and this should contain, in alphabetical order, the names or titles of the plans and the number allotted to each; the plans themselves, also being marked with these numbers, are packed away in their pigeon holes, to be found at once when required, and readily replaced when finished with.

It will be necessary to keep in the Plan Index Book a list of consecutive numbers, each to be scored through when made use of, and thus avoid further trouble and risk of confusion.

Should any plan or drawing be removed from the office for any period, a pencilled memorandum made opposite its number in the book will duly record the date and place of removal.

Mr. Jones, a client of yours, calls respecting the survey of some additions he has lately made to his estate at Blankside. You open the Plan Index Book at the letter B, and, calling through your speaking-tube, a clerk brings you in almost immediately No. 1,341, the draft plan of the Blankside Estate, which you made many years ago, and have not since seen or had occasion to think of.

Of course, many plans may be stored away in one pigeon-hole, which will save space, but at the expense of time in searching through them. It is astonishing to find how many pigeon-holes can be constructed in a room or attic of very ordinary size.

Having thus enunciated what we consider the three principal rules of office economy, and pointed out how they may be properly observed, we must leave it to a future time to consider some other minor points, which also tend to reduce time, trouble, and expense in this matter to a minimum, and while relieving the professional man of very much petty annoyance, afford him greater scope for the exercise of his talent and abilities.

WEAK AND STRONG POINTS IN THE ENGLISH SECTION AT THE PARIS EXHIBITION.

THE lateral gallery of the main building, which separates the machinery from the surrounding gardens, is devoted to the exhibition of articles of food, preserves, wines, spirits, and also to various sanitary and building appliances, and it is curious to note how differently the various countries have utilised this space, Spain, for instance, occupying almost every available inch of ground to display bottles of wine, while England, on the other hand, has a wonderful show of sanitary appliances. The one nation is satisfied in merely stretching out its hand to gather the rich produce of the soil; the other, bringing science, skill, and ingenuity to bear, succeeds, by its artificial contrivances, in lessening certain dangers which would otherwise result from its overgrown population and its unfavourable climate. Like other nations, we have found space for the display of our national drinks. The most celebrated brands that distinguish our Irish and Scotch whiskies are all there, and the more modest, though more popular, gin of England has its place among the alcohols that we produce. Nor are these objects of mere contemplation. The exhibitors, with interested liberality, are ready to afford full opportunities of tasting, and many a weak-headed foreigner has been compelled to acknowledge with tearful eyes the superior potency of, let us say, the Dublin whisky. Close at hand, however, relief may be readily obtained in the shape of a dry, powdery English biscuit, suggesting a mixture of sand, plaster, milk, and sugar, the whole, if anything, rather over-baked. Should the investigator who has ventured thus far attract the attention of the managers of the surrounding exhibits, he will be called upon to accept in rapid succession some preserved meats, which we need only qualify as stringy; some tinned fish of seedy complexion; some bottled fruits, which, in the acquisition of a watery, sticky liquid, called,—by courtesy,—juice, have lost their original flavour; a British cigar; some very gritty British chocolate; and, most cruel cut of all, some British bonbons! Thus the betrayed foreigner, after leaving the section devoted to the gastronomic products of perfidious Albion, will be fortunate indeed if his digestive faculties allow him to walk off in a direct line to the

nearest ambulance! Yet, many Englishmen, to his intense surprise and lasting wonder, consider all these things good. Indeed, some men even prefer these English delicacies to the bouquet of a Château Yquem, or a generous Chambertin; to the airy, perfumed wafer *plaisir*; to the rich succulency of *pâté de foie gras*; to the admirable harmony of thon or of sardines preserved in the most wholesome oil; to the *primeurs* from Potel and Chabot; to the vanille chocolats of a Ménier or a Marquis; to the fragrant fumes of a *loudrès*; and the untold delights in sugar, in cream, in fruits, in flowers, crisp or melting, cased in boxes of artistic elegance and unequalled originality, which attract all the world to feast on the marvels of sweetness retailed by Sirandin, Gouache and Boissier. Decidedly, in the refinements and arts of gastronomy, we are behind many other nations, and France in particular, and this is a fact forced on our attention just at the moment we were contemplating the proofs of our pre-eminence in sanitary matters. The unpleasant confusion in the same gallery of food exhibits, drains, ventilators, baths, sinks, &c., renders the above comparisons unavoidable. Also, we have had so many occasions of praising our own nationality that we do not regret this opportunity of showing some impartiality by recognising our inferiority, so far, at least, as refined food and artistic cooking is concerned. Finally, we must repeat that, if we have somewhat transgressed from the subjects we should treat of in these columns, it is the fault of the organisers of the Exhibition, who, for reasons best known to themselves, have placed Boyle's ventilators near some preserved fish, Doulton's new hand-basins close to English tobacco, Jennings's patent sink hard by Crosse & Blackwell's pickles, Peek & Frean's biscuits under the shade of Stiff's drain-pipes, and the "mountain dew" of Scotland not far, fortunately, from the water that inundates Smeaton's douche bath.

This latter exhibit has attracted much attention, for it is an imposing bath, in which a vertical, horizontal, and converging play of water can be produced, combined with the ordinary plunge-bath and douche, so that it is easy to carry out at home an elaborate system of water cure. Messrs. W. Smeaton & Sons, however, seek, we fear, somewhat too often, to combine with their admirable bath an ordinary wash-stand with special contrivance underneath, and a closet by its side. On sanitary grounds we cannot advise the presence of a closet, &c., side by side with the bath in the one small room. To render this at all safe, we must presuppose so perfect a system of trapping and ventilation that it would be much more prudent to keep these domestic services separate one from another. It is true that, if any one can render a closet innocuous, Messrs. Smeaton & Sons are thoroughly competent to accomplish this difficult task, and as the English agents for Bower's patent, they have at once the newest and most effective trap for a waste or sink pipe. In spite, however, of these facts, we do not see that any serious advantage can be obtained by crowding closet and bath together in the same chamber; while, considering the carelessness and ignorance so many persons display, such a system might at times prove dangerous.

We have already described in these columns the nature of Bower's patent trap; it remains for us to add, that it is certainly one of the most simple and yet effective novelties to be found in the Exhibition. It has been tested with ether and ammonia, and the trap has not given passage even to these volatile principles; it will resist, in a similar manner and for the same reason, the back-water which so often floods the lower floors of a house. Every ascending pressure only forces the ball which forms the valve tighter against the inlet, and it is easy to watch how, in a few hours, the water below the valve becomes discoloured with the sewer-gas it absorbs, while the water above the valve retains its ordinary colour. This is indeed an excellent and forcible way of demonstrating the amount of sewer-gas which is constantly seeking to enter our dwellings. Messrs. Smeaton & Sons also exhibit a method of applying this Bower's trap to a closet-plan. The contrivance is good and effective, and facilitates the cleaning of the closet; but it is unavoidably heavy. A bulky plunger is lifted to empty and flush the pan. When it is let down, a large rubber gasket, running round the base of the plunger, closes the main discharge of the water-closet, and the weight jams the elastic so tightly on the sides that the sewer-gas cannot pass. A small opening at the top admits the overflow water from the pan down into the centre of the plunger, where it passes through a Bower trap, and falls out into the drain underneath the plunger. Thus the side and bottom of the plunger serve as the valve and trap for the emptying of the pan, while the centre of the plunger contains the Bower trap, and is utilised as an overflow pipe. The whole can be lifted bodily out of the cylindrical aperture made for its reception, and cleaned or repaired without the least difficulty.

Mr. George Jennings is the nearest neighbour to Messrs. Smeaton & Sons, and contrives to attract the public by means of a luxurious washing-stand, which produces a shower of hot, cold, or tepid water for refreshing the face or shampooing the head. Here also are baths and closets: but they have for the most part been already described, and are familiar to the English public. To foreign visitors many of these things are novelties, and do us the greatest credit when compared with the exhibits of other nationalities. The endeavours made to exclude sewer-gas demonstrate the advance of sanitary science, though we must say that Jennings's anti-percussion admission regulating valve is somewhat complicated in its working. We would commend in preference his patent sink, which, however, we noticed when it was first introduced to the public. The opening carried across the width of the sink insures about six times as much escape-room without increasing the risk of a stoppage as that given in an ordinary sink. Mr. Jennings, in conclusion, should be congratulated on forestalling the growing exigencies of railway travellers. He has manufactured a pump-washstand for the Pullman cars, with a double-action pump, so easily worked that it can be handled successfully by a child, and water is brought from the tank to the carriage containing the lavatory without effort.

We then encountered, on leaving this stand, the equally familiar and excellent products of Messrs. Doulton & Co. Their appeal to their Continental customers is at once forcible and scientific. In their circular they point out the danger of bad drainage, and the reduction of mortality realised in those towns where their drain-pipes have been utilised. At Cardiff the death-rate was 33·2 per thousand; it is now 26·6; at Salisbury the reduction is equal to one-fifth; at Banbury the results are nearly as favourable. The mortality from typhoid or sewer fever is reduced by 25 per cent. at Salisbury; by one-third at Stratford-on-Avon, and by nearly 50 per cent. at Warwick, Ely, and Penrith. The secret of these asserted achievements consists simply in the fact that the drain-pipes were made and laid so well that they did not admit of any leakage. This, combined with the perfect trapping of closets, and the opening of waste-pipes to the air, a subject on which we have already written at length, lessened the chance of sewer contamination, that is, lessened the principal cause of typhoid fever. But the best of pipes will get blocked at times, and Messrs. Doulton's system of drain-pipe, which is so prepared that the top can be broken off evenly and replaced after the pipe has been cleansed, meets the difficulty. Stanford's patent spherical joints which can bend without causing a leakage, attract much attention. These have been used at Reading and Oxford, and often save concrete foundation. They are easily laid, and mistakes in fixing are rendered impossible. The cup-and-ball joints render this operation so simple that it can be accomplished by the most careless workmen, while the spherical shape enables us to bend the pipe up or down or sideways without letting the water out. A bituminous substance in the joints renders the fitting more secure. Thus the road may give way a little, or a slight earthquake occur, without causing leakage in the sewer or drain-pipes. The same exhibitors have also recently undertaken the production of ordinary printed ware, celadon colours, and ivory bodies. This is altogether a new branch of manufacture, worked in Staffordshire, and taken in hand only two years ago, so that the present is the first exhibit of these products by the firm of Doulton & Co., and we may heartily congratulate them on the useful and artistic results achieved.

Sir John Steell, R.S.A.—We are glad to hear that Sir John Steell, who has for some time past been prostrated with illness, has now so far recovered as to be able to be out of doors.

WESTMINSTER ABBEY.

WE are very glad to find that the destructive work which was going on in the Cloisters has been stopped. It should on no account be resumed. In the application of any preservative, it is necessary that the object to be treated should be not only preserved, but preserved *unchanged*; therefore, any process that requires as a preliminary the removal of the existing surface, or of the efflorescence on that surface, or which immediately or ultimately changes the colour or texture of the surface of the stone, is to be strongly condemned.

It is not too much to say that Sir Gilbert Scott, had he been living, would have deprecated in the strongest terms possible the process that has been within the last month applied to the two northern bays of the western walk of the Cloisters of Westminster Abbey; for no man more strongly than he protested against the removal of ancient surfaces. The chief object of the treatment applied to the interior parts of the church was to preserve them; but, unfortunately, Sir Gilbert was not equally particular about retaining the colour of the stone, whether natural or imparted by age. His process was to blow off loose dust, and apply, by means of a syringe, a preparation of shellac. The result of this treatment may be seen in any part of the church. The forms are preserved, but the lac has darkened and entirely changed the ancient colour of the building. Unfortunately, this same process has been applied to the marble, which did not require it for protection, as well as to the stone, with the result of giving it an appearance as if it had been covered with a brown varnish. Those who knew the Abbey twelve years ago can alone appreciate the extent of the harm that has been done, but some idea may be formed by comparing the western with the eastern face of the two great westernmost columns of the nave, the former remaining "untreated." How very unlike the "treated" surface is to the original marble surface may be seen by comparing it with one shaft in the north transept, which, by a series of accidents, had been covered up and protected from the fourteenth century till the year before last. All this, however, is as nothing when we compare it with what has been done recently in the west cloister. There the first step taken towards preservation has been to remove more of the surface than would have perished spontaneously in a century. The ribs of the vaulting that remain untouched show the old mouldings, still effective and beautiful, although the surface is much decayed. On the "preserved" ribs scarcely a line of moulding remains, the stone having been reduced to a new and plain surface.

To make the matter more regrettable, the process appears not to be so effectual as was thought,—at all events, on surfaces partly exposed to the weather, as in the cloisters. Part of the east walk was "treated" some years since, and the result appears to be that the stone now falls in flakes instead of in powder. The ugly brown surface that was given to it is now flecked all over with white patches. It was scarcely worth while to destroy the charming tints of antiquity for such a result.

THE CAREER IN GREAT BRITAIN OF REVIVED GOTHIC.

HAVING spoken disparagingly, in a late paper under the above title, of some practices which are looked upon with especial favour by many prominent men, the following remarks, by way of strengthening my position, may not be deemed uncalled for.

The least generally acceptable of my remarks, perhaps, would be those condemnatory of the adoption of the lancet window. This feature as treated in many examples mediæval and modern,—grouped into three, five, or seven sister-lights, though still a mere slit in the wall, may have a not unpleasing effect, which it has in the new cathedral designs to which I referred. There the architect has made the most of it, and done all that could be done to yield variety. But the lancet window is only the Norman loop-hole elongated; and, however grouped, it is not to be compared with the simplest form of the geometrical or curvilinear window that succeeded it, which is the grace and perfection of the style, and among the jewels of architecture. Going back from this is descending from architecture to building; and, as I remarked before, would

only be paralleled if the painter should fall back upon monochrome after revelling in all the harmonies of colour. The Perpendicular window has, along with the style to which it belongs, been pronounced by a great writer "detestable," and certainly, in some extremely perpendicular and characteristic examples of it, with head composed chiefly of parallel straight lines, which occur in some of our finest cathedrals, it so appears,—liney and monotonous. Yet the Perpendicular window may have such an infusion of geometrical or curved forms as will well-nigh redeem it. The great front window of Westminster Hall is not an ignoble form; the windows of the chapel of Henry VII. are elegant. I think the Perpendicular window is susceptive of great beauty; and examples of it could be pointed to, imitated in some modern ones, in which great beauty is displayed, and which have more harmony and unity than some geometrical ones. But for the lancet window there is no redemption. It is not detestable any more than it is lovable. It is simply empty, and can never be otherwise; and when it appears numerous enough in the side of aisle or clear-story, to give sufficient light, with intervening buttresses, a miserably cut-up and mean appearance is induced.

The great and sterling qualities of the phase of Gothic to which this feature belongs, and to which it in some measure owes its prestige,—a phase or style which, to much of the energy and grandeur of the Norman, unites grace and purity of form, has seduced architects to a literal revival or reproduction of it in the spirit of its time; than which, I conceive, no greater mistake could be made in reference to art. The embodiment in one building of all and the highest grace and perfection that Greek or Mediævalist has left us, would alone not constitute that building a true work of art, unless the character of the present period found expression in it. This only could give it a charm for the imagination, and genuine interest as a creature of architecture. How much more vain is it to reproduce in form or essence particular phases of art that were abandoned many centuries ago. It is ignoring all advance of the intervening ages, and character of the modern English mind, which ought to be reflected in its works. The buildings and style sought to be reproduced were the legitimate result of the state of things existing in the Middle Ages, which is almost diametrically opposite to that of the present, and can never return. How totally different it must have been from that which now prevails may be judged if we consider that even the vernacular language spoken in the Middle Ages has since perished, and is not the English language now spoken, words and forms of expression having grown obsolete. The most flourishing period of Gothic was prior to the dawn of the rising literature of Europe. In the thirteenth century chivalry was in its vigour, giving life to institutions and customs which have long since become extinct. Printing was undiscovered, and alchemists were dreaming of the philosopher's stone. On the thirteenth century Chaucer, the father of English poetry, Shakspeare, Spenser, Bacon, Milton, had not breathed; nor was it influenced in any measure by the revival of ancient sculpture and new birth of Italian and European art under Nicola, Cimabue, and Giotto. Moreover, since that period the magnificence of the inanimate creation, the "splendour of the grass, the glory of the flower," have grown into greater favour and taken firmer hold on humanity, and the poetic and artistic mind has discovered in the grandeur of external nature another great fountain of sublime emotions laid open to it. Whatever merit, therefore, the pure Mediæval architecture may have, it is impossible that the modern English mind can be in full sympathy with it. What is wanting to its interest, the modern impress and elements, it must receive in its passage into modern structures through the mind of the architect. The use of the Mediæval examples has been mistaken. What history is to the politician,—the highest form of human experience, the great remains of architecture are to the architect. They are pregnant with interest as expositions and illustrations of those great principles of art which are of unceasing obligation, and which were originally derived from the universal preceptress, Nature herself. Instead of being reproduced, they are to be submitted to the resolving and combining powers of his mind. Architecture is an imaginative art, and its practitioner needs something of the poet's creative and shaping faculty; and what measure of this he has he should laboriously cultivate; and not stultify and cramp his mind to the exclusive contemplation of past phases of art, and the endeavour to get into the Mediæval world of thought, the tendency of which is to weaken his own artistic powers and sympathies. While seeking to catch the spirit of the old architects and sculptors, he must neglect the cultivation and renewal of his own, and lose all that is best in his own individuality. It is ignoring his innate and peculiar faculties and individual dignity and worth. Every artist of any power has a decided bias in some direction or other; but the course in question must contravene this, and destroy whatever is fresh and vigorous and characteristic of himself. He may profit to any extent by the earnestness, simplicity, and singleness of aim of the thirteenth-century artists; he may nurture, purify, and elevate his own spirit by communion with theirs; but he is no more under obligation to adopt their motives and work in their peculiar spirit than is the modern poet to compose in the spirit of the Provençal ballads of the Troubadours and Trouvères. However indebted to another, it must be his own spirit that he works in. The highest merit and value of a design must come from the architect himself, his own earnest thought and feeling, which will give value to the meanest materials. "The eye of the Dutch and Flemish schools though shut to form, tipped the cottage, the boor, the ale-pot, the shambles, and even the haze of winter with orient hues and the glow of setting suns." "Consider it," says Fuseli, "as an unalterable law of nature that all your power upon others depends on your own emotions. Hearts alone can penetrate hearts." Work in the spirit of the old sculptors, and from their sphere of thought, supposing you could fully get into it, and you cannot advance upon them and their age, and be in harmony with the present one. The highest merit of your work, because that was its aim, will be that it is Mediæval, and out of harmony with the present,—Mediæval in spirit and character, and modern only in material and execution. The course in question is condemned by the fact that it affords no field for the operations of genius, the minister of art, which consists in the discovery and practice of principles previously unknown,—going beyond the received theory of art.

To a great proportion of the profession the foregoing remarks will not apply. They are blessed with larger views and are acting upon them. But the view I am contending against is held by many earnest and conscientious men at the present hour. In fact, their works betray it. They are thirteenth or fourteenth-century works, and have nothing of the present age breathing from them,—nothing to show that the architects have observed, and thought, and felt, in the nineteenth century. On them you look in vain for one inch of detail or ornament that might not have been placed there ages ago; and they might be mistaken by an enlightened American or Australian visitor, supposing the tinting and corroding effect of centuries on the stone were anticipated, for Middle-Age structures. They bear the same relation to original buildings that a translation bears to an original literary composition, the true object of which is to transfuse the spirit of the old work into new material uninfluenced by the individual habits and bent of mind of the translator, whose best praise must be that he has added nothing and omitted nothing, and that none of the depth or delicacy or sweetness of his original, if it have any, has escaped him.

Working on this principle the art could not only not advance upon the present, it could never get up abreast of the present, but be ever in arrears. It will be as stationary, as stagnant, as was philosophy in the hands of the Schoolmen; and the satire of the poet on the Mediæval disciples of Aristotle will apply equally to the present architectural worshippers of the thirteenth century, or any other period:—

> "They stand
> Lock'd up together hand in hand;
> Every one leads as he is led;
> The same bare path they tread,
> And dance like fairies a fantastic round,
> But neither change their motion nor their ground."

This receives no countenance or support from Pre-Raffaelism, which is based on the conviction or impression that painters were neglecting certain essential qualities of art—that utterances of nature, or facts of life which ought to be expressed as it were in italics or in capitals were slurred over and scarcely expressed at all. The Pre-Raffaelite Brethren were sent back to the rich treasures of devotional thought and feeling embalmed in the works of the earlier period of Italian painting, more especially in those of Fra Angelico, whose whole art-life has been justly called a hymn of praise—works which were in advance of the contemporary poetry of Italy, and in which may be traced the influence of the mighty genius of Dante. Some of them have shown, it must be admitted, a blind infatuation for hard outline, and while ignoring harmony of colour have sought after mere brilliancy, a quality which depends more on the colour manufacturer than on the artist, and adopted the false perspective and other technical faults of their models. But these were not the legitimate teaching of the school, which had a lofty aim, and was directed to lead the artist to a more faithful rendering of the infinite beauty of nature, and, by the earnest and serious treatment of biblical and religious subjects reflect something of that "light which lighteth every man that cometh into the world." Its teaching might not inaptly be symbolised by the advice of Solomon, "Go to the ant, thou sluggard; consider her ways, and be wise."

The Gothic architecture, strange to say, is still dealt with in too archæological a spirit; too much time and talent is given to the history and distinctions of styles and periods. These archæologists, who are archæologists only, and have nothing else to do, should settle. But architects can have little call to them. What can it matter to an architect, for instance, with any artistic strength of his own, whether the Geometrical and Curvilinear periods are viewed as distinct styles, or as subdivisions only of the Middle-Pointed style? I am quite sure that William of Wykeham, when casting about for materials and suggestions for his grand west front of Winchester Cathedral, did not care a straw whether Iffley Church belonged to the Norman period, or to the Transitional, which I remember was a point in fierce dispute between eminent architects some years ago. To grasp the artistic teachings of that and of all other examples at his command, and use his materials with congruity and fitness and artistic harmony of form, would, I conceive, be his sole concern.

It is strange that while we hear so much about styles and periods, so little is said about invention, design, composition, expression, chiaroscuro, colour; but these are as important in architecture as they are in painting, and nothing would have tended more to promote a due appreciation of ancient examples, and the prevention of their blemishes and shortcomings being eternised in modern works, to the misleading of posterity, than due instruction in them. Along with constructive unity and truth they should have been made the chief subjects of Royal Academy lectures. The best advice that could be given to the young and undeveloped architect is, Respect your intuitions, assured that every surmise of the mind may be of value. "Sweetest melodies," sings Wordsworth,—

> "Are those that are by distance made more sweet.
> Whose mind is but the mind of his own eyes,
> He is a slave; the meanest we can meet."

Watch carefully the order in which feelings succeed each other; the movements of your inner life, and the way in which things appear when presented to your mind in its best and highest moods. Search into all art-works,—Ancient, Mediæval, Oriental,—for what truthful beauty or what beautiful truth you can find,—for that which is everlasting by its nature and can never grow obsolete; but digest it well in your thought-alembic, and make it the harmonious furniture of your own mind. And instead of trying to kindle in your breasts the fire of the elder artists, a practice by which no one ever warmed a cold heart, fan what fire you may have of your own. Imbue and enrich your mind, as if you were training for a poet, with images and sympathies from every available source in nature, art, and literature, and cultivate your innate feeling for the good, the true, the beautiful, wherever found. Study well the mathematics, both for mental discipline and insight, as well as the great principles that are common to the whole of the fine arts; and so deepen and broaden your thought. Nor forget, in the process of satisfying the reason, the emotional and poetical element of architecture, which is higher than the scientific. Slight not constructive consistency and truth, but consider it as a means to an end,—beauty and expression, which every architectural creation should have, as well as that complete finish

which shows that the heart of the worker was in his work. Act an independent part, and exercise an art not of tradition but of understanding and feeling. Be not an echo of the past but a living voice of the present. In short, be strong of mind, lofty of soul, tender of heart; which, let me add, involves the cultivation of a spirit of unworldliness. The highest artists have ever been unworldly in life and aim. The highest revealings in art as in religion are best understood by the pure and simple and true of heart.

The present age is sufficiently munificent and fostering to architecture to encourage hopes of the highest manifestation of its power and beauty. It should be seen in such edifices as cathedrals, which are now not unfrequently called for. A cathedral erected in the present day should show no imitation or following of one phase of Gothic, but be an harmonious development,—the flower and perfection of the entire system. It should profit by every mistake or shortcoming of its predecessors in every part of the world; and while indebted for some beauty or excellence to every one of them, it should be superior to all. Exaggerating their good and eschewing their bad qualities it would be an idealisation of the class,—an architectural Apollo. The wise architect would be anxious to take advantage of all advance in architecture and art, in science and literature, and in knowledge of architectural history in modern days, and show in his work that which the Mediævalists could not show or failed to show. He would make it the better, for instance, for what Egypt, Greece, Rome, Spain, and India had taught him, and of what warmth of fancy and imagination he had acquired from communion with them and added to his original stock. If creative power or invention, which is the essence of the fine arts, is ever put forth, it should be in the design of a cathedral, which should show advance upon the Mediævalists both in form and essence. The architect could not create the style he wrought in any more than the poet can create his language; but as the latter would exhibit some metaphors and other figures of speech beyond what has been used by preceding poets, so he, the architect, would show some new elements or new modifications of the old, the result of new influences and inspirations; or he would enrich the old elements with new meanings.

In designing a cathedral the unfettered architect would venture to depart from the Latin-cross form, which, with long transepts, is scarcely the grandest of compositions, and adopt a more compact general form, which might have the effect of expanding and vivifying the style, disclosing new beauties in it; and showing the possibilities that are lurking within it, and only awaiting the magic hand of genius to draw them forth to the light. The central crowning feature he would, I think, make more curvilinear than the corresponding Mediæval forms. If the architectural imagination should run riot or luxuriate anywhere it should be in the conception of such a feature, which, sent up into the welkin only to gladden the eye, should be a vision of architectural glory.

Whatever plan he adopted he would regenerate the buttress, and make it as symmetrical as would consist with due perspicuity of expression, which would be making it more architectural, a character which it greatly lacks in its usual form; for only so far as it is shaped by the sense of beauty in the architect is the buttress a thing of architecture. Otherwise, and formed only in obedience to the law of the resolution of forces, it is an engineering feature, and in an architectural composition a dissonant object, and no more architectural than the pillars of a tubular bridge. He would so form it as to supersede the need of extravagant projection, which mars the perspective view; and render unnecessary its extension upwards into a finial, and placing the safety of the building at the mercy of any mischievous person. He would substitute the crocketed pinnacle by a human or angelic figure, or noble animal. Flying buttresses, if used at all, he would be still more careful to modify, as they generally prevent any good view of the clearstory windows being obtained. The omission of the buttresses from the design of the Church of the Sacred Heart would be an immense refinement of it.

The same feeling that would reform the buttress would desire a greater prominence of the cylindrical column, a feature which, under some condition or another, is an everlasting element of architecture, and essential to the brilliancy and delicacy which we look for in all high-art works, and which are wanting in buttressed and astylar erections. He would have the column, of nearly Classic proportions and purity, and on as large a scale as possible, to form and adorn the west entrance, where it might combine with the pointed arch to grander purpose than it has yet done; though it is here generally, I mean in the formation of the great doorways, that the Mediæval minsters rise to the greatest grandeur.

Reformation of the buttress, and greater prominence of the column, would render the Gothic Cathedral less atomic in appearance, and more brilliant and graceful, and consequently more meet, clothed with the splendour of sculpture and painting, and filled with the tenderest melodies of music, to symbolise and pay homage to the beauty of holiness.

In the house that connects, as it were, the present and future states,—the earthly gate and vestibule of heaven,—in which the curtain of futurity is withdrawn, disclosing a prospect of human glory that can never pale, we should naturally expect sculpture, and painting, and architecture to put forth their utmost strength, and raise their divine voices to the sublimest pitch. The lofty views of Christianity should animate them to nobler flights than classic paganism was capable of.

In the imaginary building under notice the most vital sculpture would animate and perfect the most symmetrical and sublime architectural composition, bringing it into an infinitely higher sphere and giving it greater power over the imagination. It would come as sequel and supplement to the structural beauty, to which its richness and brilliancy would perfectly assimilate. So subtile would be its correspondence with the ruling spirit and character of the structure that it would seem as if the building had attracted the sculpture by an inevitable operation of natural affinities.

No such object as instructing the ignorant in Scripture history would be contemplated. But high class sculpture could not fail to charm by its beauty, to touch by its expression, to elevate by its sublimity. By dint of it the building would shed a morally and spiritually helpful and healing influence around it, and scatter seed the rich fruits of which in the breasts of cultivated and uncultivated would be incalculable. Grand natures it might help to enlarge and enrich, lovely ones to beautify and refine, and all to lift into a purer air.

Art is of herself, I know, unable to purify the heart, or elevate or regenerate the character. But she may be one of God's chosen instruments for doing it, or for aiding in the work,—a work for which her intimate relations with life, and sympathy with its joys and sorrows, render her the more fit. The sublime works of Michael-angelo, and the great religious artists of Italy, which may be considered as material embodiments of Revelation, show that it is within her power to present the most lofty and pathetic scenes of the Bible with greater force than what lies in the words of the inspired page, and suggests that subjects could be selected therefrom, which, embodied in form or colour, could not fail to do their silent work, and bring its moral and spiritual ideals, and standards of virtue and holiness, more vividly before the eyes than they could otherwise be brought. If in Christian teaching it is proper to employ the finest art of rhetoric, the loveliest grace of fancy, the subtilest harmonies of elocution, it is fitting that the best efforts of the arts of form, which, as well as the other fine arts, poetry and music, are proofs of the unspeakable dignity of man, should also come in aid of the Gospel The fine arts seem alone of all earthly creations inspired by an idea or soul worthy of association with a future and infinite scene, where alone, perhaps, as suggested by some devout thinkers, they can be adequately developed and fulfil their earthly promise.

The above remarks refer chiefly to the exterior. The interior, adorned from the vivid glories of the painter's imagination, might be indued with still more subtile power over the heart to guide it in its struggle towards light. Painting might not only be instrumental in removing the usual hindrances to devotion in the shape of wandering and distraction of mind, but join with the solemn and awakening airs of the church music to sweetly influence and exalt the passions, and guide them towards their proper object, and so assist in adding to the amiability of God's tabernacle, and making a day in His courts better than a thousand. We should have to wait, I fear, some time for faces of saints and angels so irradiated with celestial glory as those of Fra Angelico, as such could only be painted by men leading the life of the pious monk. But surely there is religious earnestness and devotional feeling combined with enthusiasm and tenderness for art and beauty left in the world to take fire at the exalted characters and scenes of the Bible, and weave them into pictures which would embody the distilled essence of its poetry and wisdom.

The cathedral of the present century should, in short, exhibit the loftiest ideal of architecture—architecture in the full sense of the word, with all the highest aid of her handmaids. By means of one art or another, it should appeal to and satisfy the whole mind,—memory, reason, imagination, and the passions; blending the beautiful, the graceful, and the tender with the intellectual and sublime. New, and yet old, it would be in harmony with all about it, and seem as if it had grown out of the earth to the symphonies of angels. Conceived by an unfettered mind, inspired by all legitimate sources of inspiration, and executed in a like spirit, it could not fail to lay open some hitherto undiscovered regions of art and beauty.

SAMUEL HUGGINS.

THE LIVERPOOL WATER SUPPLY.

THE question as to the future water-supply for Liverpool has for some time past formed the subject of warm discussion in the town, one party contending,—as was the case upwards of twenty years ago, when the supply from the Rivington Hills led to an inquiry before the late Mr. Robert Stephenson, C.E.,—that there is a sufficient quantity of good and soft water under the red sandstone in the locality, without going to a distance for a supply. One of the most ardent supporters of this theory is Mr. Alderman Bennett, who, for several years, has clung to it with unflagging tenacity, and at a meeting of the Town Council which has just been held, when the entire question as to local or distant supply was discussed, Mr. Bennett observed that with a proper system of well-supply he would stake his fortune on the obtaining of good and soft water in the neighbourhood of the town, sufficient for all the requirements of the inhabitants. On the other hand the opponents of the well-supply urge that it is not only deficient in quantity, but that its hardness renders it unfit for general domestic purposes.

The supply from the Rivington Hills,—about twenty miles from Liverpool,—added to that obtained from the local wells at Bootle, having been found inadequate, the question of an additional supply has now for two or three years past occupied the attention of the Council, but nothing definite has yet been arrived at, although a large outlay has been incurred in surveys and engineers' reports on several schemes. The Water Committee and the Council appear, in fact, to be chargeable, in some sense, with an uncertainty of purpose, for no less than four different projects have, in turn, been favourably received and then abandoned, and now a fifth seems to be in favour. A supply from Windermere, Ullswater, and Haweswater Lakes, in Cumberland, together with a project for obtaining a supply from the neighbourhood of Bleasdale, near Lancaster, have in succession one and all been put aside, and the local authorities are now turning their attention to Wales, the river Verniew (or, in the Welsh vernacular, *Vyrnwy*) being the source now looked to. It forms one of the heads of the waters of the Severn, and on this project Mr. Deacon, the water and borough engineer, has just presented an interesting report, in which he describes the preliminary engineering steps which have been taken, and the proposed embankments, a lake to impound 10,500,000,000 gallons of water, and other works. He then adverts to the several alternative routes, and gives it as his opinion that the route along the eastern slopes of Montgomeryshire and Denbighshire to Helsby Hill, on the banks of the Mersey, is the best. On this route, he observes:—

"The total length of this line to Woolton Hill is sixty-nine miles, made up as follows:—First, by three tunnels, capable of conveying 40,000,000 gallons a day or more. The first between the proposed lake and Hirnant, having a length of two miles and a quarter in the Caradoc beds of the Lower Silurian formation; the second, two miles and a half west of Oswestry, having a

length of seven-eighths of a mile in the mountain limestone; the third, one mile and a half west of Oswestry, having a length of one mile in the millstone grit. Secondly, by nearly twelve miles of built and covered conduit, capable of conveying 40,000,000 gallons a day, lying for the most part between the proposed lake and the south bank of the Dee Valley, at Fron, near Trevor. Thirdly, by nearly fifty-three miles of cast-iron main, the pipes to be first laid being capable of conveying 13,000,000 gallons a day, and similar mains being laid as subsequent instalments are required. These pipes will be laid in the valleys crossing the line of built conduit, and from the termination of the built conduit on the south side of the Dee Valley, near Trevor, to a reservoir on Caergwrle Mountain. From this point the line again crosses the valley of the Dee, passing one mile south-east of Chester to a reservoir on Helsby Hill, near Frodsham, whence it is continued past Runcorn and Widnes to a reservoir on Woolton Hill, near Liverpool." In his estimated cost of the works the engineer puts the expenditure as follows:—Length of aqueduct, sixty-nine miles: total cost for first instalment of 13,000,000 gallons a day, 1,180,513*l.*; second instalment, 688,036*l.*; third instalment, 720,442*l.* Estimated cost of land, purchase of buildings, and way-leave:—First instalment, 115,775*l.*; second, 6,400*l.*; third, 6,550*l.* Additional estimate for filters (including works and land), if required:—First instalment, 57,902*l.*; second, 57,902*l.*; third, 57,902*l.* The total estimated cost of the works is therefore, 2,891,422*l.*" Dr. Campbell Brown, the borough analyst, concludes his report on the analysis of the water as follows:—"It is superior to the present Rivington water, and would be a much safer supply. It is superior to the present supply of Manchester, Birmingham, and many other towns receiving water from sources of similar character. It is superior to Windermere, and practically about as good as Ullswater and the main feeders of Bala Lake."

At its recent meeting the Town Council voted a further sum of 2,000*l.* to the Water Committee for the investigation of the proposed supply, and it also transpired that Mr. Hawkesley, C.E., and Mr. Bateman, C.E., have both been requested to report upon the scheme. Meanwhile, the Severn Navigation Commission appear to view the scheme with disfavour. They say that the quantity of water proposed to be taken is estimated to amount ultimately to 52,000,000 gallons a day, and that the abstraction of this immense volume of water from the Severn watershed, and its diversion into another district, appears fraught with momentous consequences to the navigation of the river. Their engineer, Mr. Williams, describes it as "a most unwarrantable interference with the regimen of the river, and of the economy which nature has adopted for the regulation of the Channel." At a special meeting of the Commission which has just been held, it was resolved to communicate with the several corporations and Local Boards affected. The Liverpool municipal authorities are thus, at the outset, threatened with Parliamentary opposition.

At the same meeting of the Council at which measures for the prosecution of the Vyrnwy scheme were adopted, a discussion of considerable interest took place, showing the extreme hardness of the Bootle well-water. The facts are these, that Liverpool is supplied with two qualities of water,—that from the wells which is hard, and that brought from the catchment waters at Rivington, which is soft. Over the greater part of the town these waters are distributed in a mixed form, so that the hardness of the one is modified by the softness of the other. But this system is inapplicable to the northern suburbs, in consequence of the local arrangement of pipes and reservoirs not admitting of the admixture being effected. The north end is almost exclusively supplied from the Bootle wells, the water from which is hard, and the inhabitants complain that they should have no participation in the softness of the Rivington water. The chairman of the Water Committee, in moving a resolution to the effect that 10,000*l.* be expended in laying down pipes and other works which would provide for the residents in the neighbourhood of Bootle having the advantage of the soft water from Rivington, showed, on the authority of Dr. Lyon Playfair and others, that hard water was not only wasteful for washing purposes, but also in respect of the consumption of tea. He quoted Dr. Campbell Brown, the Liverpool analyst, who stated that the use of hard water represented a loss to the housekeepers of the town of no less than 40,150*l.* a year in soap alone, that is to say it required 40,000*l.* worth more soap to do the laundry work of Liverpool with the Bootle water instead of Rivington. The chairman added that there were 200,000 people supplied with hard water from the Bootle wells, and from a calculation he had made the loss to them in the article of tea was 80,000*l.* a year. The resolution to expend 10,000*l.* in laying down the new pipes, as proposed by the chairman, was carried.

In presence of the above, it is noteworthy that, immediately following upon the passing of the resolution just alluded to, a long discussion took place on a proposal to expend a further sum on deep boring at Bootle, 15,000*l.* having already been spent in going to a depth of 1,000 ft. It was urged by the advocates of the proposal that by going about 200 ft. deeper an abundant supply of soft water would be met with. The motion was, however, strongly opposed, on the ground that the boring had, so far, been a complete failure, and ultimately it was referred to the Water Committee to report to the next meeting of the Council on the advisability of continuing the boring at the Bootle well.

Such is the uncertain position of the future supply of water to one of the largest and most important towns in the kingdom.

THE RAILWAYS OF THE BALKAN PENINSULA.

MUCH ink has been spilt over the political position which the newly-created Bulgaria and Eastern Roumelia are to occupy in the disjointed conglomeration of incongruous elements still considered the Ottoman Empire. But very little attention has as yet been paid to the conditions which are to regulate the future development of the countries just started on their own independent course. This is a problem left to be worked out by an uncertain future. Very much, too much, in fact, has been entrusted to the "rich natural resources" of those countries, and it has become the fashion to build up castles in the air on the hypothesis that those natural resources will effect almost anything, will work wonders. Fortunately, in this instance, the rich resources will do a great deal, and, given only reasonable time and undisturbed peace, the undisputed inherent vitality of the emancipated races are sure to contribute their share in regenerating those provinces.

In the modern state of civilisation, however, rapid intercommunication is imperative for the prosperity of a country; railways are indispensable for progress; this is one of the causes of the decline of Turkish domination. The Turkish Government in its decrepitude has either obstructed or neglected most unjustifiably or helplessly, almost as if driven by fate, the opening up of some of its richest provinces. Now that some of those countries at least whose destinies have, unfortunately for humanity and civilisation, been only too long linked with the downward course of Turkey have at last been violently wrenched from her, much will depend on the way in which the new countries seize the splendid opportunity thereby offered them, and set about improving their means of communication. On that account the statement below acquires additional interest, showing, as it does, at a glance how far the want of railways has been attended to, and what new lines will have to be constructed to make those already existing at all useful. European Turkey, as constituted before the war, possessed the following lines of railway in working order:—

1. *On the Bosnian Route.*

	Miles.
Salonica—Uesküb	151
Uesküb—Mitrovitza	74½
Banyulaka—Novi	63½
Total	289

2. *On the Roumanian and Servian Routes.*

Constantinople—Adrianople	198
Adrianople—Sarembey	151
Kulleti—Dedeagh	70
Tirnova—Yamboli	65
Rustchuk—Varna	140
Tchernavoda—Küstendje	39
Total	663

Altogether, therefore, 952 miles of railway are in working order. All those lines, however, end in *culs de sac*; they have no junctions with the Austrian or European network of railways. A glance at the map of Turkey will show that, if a connexion is to be established, either directly or indirectly, either of most moderate dimensions or even in a roundabout way, the following lines must be constructed:—

1. *On the Bosnian Route.*

	Miles.
Sissek—Novi	28½
Banyaluka—Mitrovitza	317½
Total	346

2. *On the Servian Route.*

Kikinda—Nish	274
Nish—Sofia	92½
Sofia—Sarembey	71
Total	437½

3. *On the Roumanian Route.*

Yamboli—Shumla	91½

Consequently, altogether 875 miles will have to be constructed in order to come at all up to the requirements of the through traffic to Constantinople and Salonica.

It is of good augury for the countries concerned when we hear it stated, on good authority, that the Russian Government is devoting its serious attention to the subject of Bulgarian railways. Complete plans are being prepared, and it is said that it is its intention not to confine itself to the scheme of constructing a line from Yamboli to Shumla, but also to make Widdin the central railway point, and to construct a line along the southern bank of the Danube. Of course, the matter is still in embryo, and for very important reasons. In the first place, the Russian Government has not yet come to any decision as to the question of width of gauge, although urgent confidential inquiries on this point have been addressed to it. The Russian railway gauge is wider than those of other European systems, and precludes therefore the through passage of carriages from other Continental railways on to Russian lines. Here again, unfortunately, as has been the case with nearly all Russian railways, the strategist seems most likely to carry his point by worsting his commercial rival. The war party in the Russian Cabinet insists that the future Bulgarian railways should have the same width of gauge as the Russian lines; while, on the other hand, the opinion finds expression that it would not be practical to construct the intermediate link of the Levant traffic on different principles. It is very probable that military considerations will prevail, for it is not likely that the Russian authorities would voluntarily again submit, in a future campaign, to the great inconveniences suffered by them, for instance, on account of the difference of gauge between the Russian and Roumanian railways. Being at present masters of the situation, they will make the most of their dominant position. Whichever way the matter may be decided, however, it is at least satisfactory to know that the country most immediately concerned, Bulgaria, will ultimately benefit by almost any proposed railways.

In connexion with this subject it may also be mentioned that already a definite benefit will accrue at least to another country, and that thus part at least of the labours of the Berlin Congress will be indirectly of practical utility, by advancing in some degree the development of railways in the East. The Servian Skuptschina,—besides agreeing to the conclusion of a treaty of commerce with Austria, and sanctioning the convention for the regulation of the navigation of the Iron Gate, having regard to the navigation rights of Servia as an independent Danubian state,—has given its consent for the construction of the two lines of railway from Belgrade over Nish to Salonica and Constantinople respectively. According to an agreement come to at Berlin between Count Andrassy and the Servian Minister, Ristics, those railways must be completed within three years. While Servia was only semi-independent, the conclusion of such a convention was entirely out of the question; it will be remembered that, for a long time and on some pretence or other, the Turkish Government had always either openly opposed the scheme or placed some obstacles in the way of carrying it out, so that railway contractors turned away with disgust from a country where they received so little encouragement; and, like many other beneficial works which it requires

only capital and security to execute, the undertaking lay quiescent. The two wars of 1876 and 1877-8 still further delayed the execution of those much-needed lines; but now it is trusted that the countries formerly under the direct sway of the Porte will be enabled to make use of their liberty or semi-independence to promote works of peace, such as railways and other useful undertakings.

A notice of the railways of the Balkan Peninsula would be incomplete without a reference at least to those of the Greek kingdom, if only to state that its present area being so circumscribed and unfavourable, its lines of railway are both few and short, and of such slight strategic and commercial importance that a mere allusion to them is all that is required. It would be another matter, however, should the Greek question, slowly but surely cropping up, be decided in the Hellenic country's favour, should the most sanguine aspirations of Greeks be fulfilled, and more extended boundaries be allotted to Greece, then the enterprise of the nation would be sure to cover before very long the newly acquired provinces with a network of railways. This may be but the dream of an enthusiast; yet let him take heart from the recent utterance of a prominent statesman, that Greece "has a future."

A MUSHROOM TOWN.

OBSERVANT travellers in the suburbs of London cannot fail to notice the vast extent of the building operations in progress, not in one direction only, but all round the metropolis, and will possibly be incited to wonder as to where the people are to come from that are to occupy all these large extensions of the "province of houses." It is true that there has been a great displacement of population in the City proper and its surroundings to make room for railways and railway stations, — passenger and goods, — but the numerous erections of Peabody and Artisan Dwellings Company buildings, each congeries almost a town in itself, seem to be providing accommodation for part of the dispossessed, and the provision just referred to is being so largely supplemented by private speculators as to lead to the conviction that, *malgré* the complaints of "hard times," London is prosperous, or at least attractive to various classes, or that, whatever other injunction is disobeyed, that to "multiply and replenish the earth" is being duly attended to.

The new buildings in progress round London are of various classes, some lofty, others lowly; some are set on good foundations, and built to live in, others are built—as Peter Pindar's razors were made, not to shave, but—to sell. It is not intended to be insinuated that the new town we are about to refer to belongs necessarily to the category last indicated, but simply to notice it as a marvellous illustration of almost preternatural structural enterprise and activity. Our new town, which includes about twelve roads and streets, and about 600 houses, the greater portion of them occupied, was laid out about a year ago, and the first brick laid,—we did not learn anything concerning the concrete or footings of the foundations,—in September, 1877! The new settlement, at present detached and rather out of the way, is situated between the Commercial Docks and the Greenwich Railway, and closely adjoining, on the south side, the "Royal St. Helena Gardens," Southwark Park. Concerning this place of resort, it has been grandiloquently written:—"These public gardens are the oldest in existence. Before the advent of the rail, Rotherhithe was the Arcadia of tea-gardens. Though diminished in number, and shorn of their fair proportions, some of these haunts of pleasaunce remain for the reflection and recreation of the industrious class of operatives who compose the population of this dense neighbourhood. One, called the St. Helena Gardens, still stands in all its integrity. Towards the close of the last century, this place was in high repute; it almost held rank with Vauxhall and Ranelagh, and was not unfrequently distinguished by the presence of royalty and aristocratic beauty. Here the first gentleman in Europe,—the Prince of Wales, afterwards George the Fourth,—delighted occasionally to ramble with that galaxy of wit and loveliness, the glorious system of which he was ambitious to be considered the central sun. . . . As a relic of the last century these gardens will amply repay a visit. . . . They contain some of the oldest and rarest trees in or near London." It is a rather depressing anti-climax to this grandiose statement that the lessee was recently charged by the police authorities with "allowing riotous quarrelling and disorderly conduct in his grounds on the occasion of a 'glove fight.' The offence having been established, and a previous conviction for allowing betting on his premises having been proved, the defendant was fined 5*l.* and 2s. costs, and his licence ordered to be endorsed." Is the endorsement the first stage towards the "disestablishment" of this interesting "relic of the last century," with its old and rare trees, and hallowed memories? Can it be doomed irrevocably, like Cremorne, to pass away "unwept, unhonoured, and unsung"?

The new town,—say St. Helena,—covers an area of between ten and twelve acres. It is built upon surplus land that had to be taken by the East London Railway Company, and is designated the East London Railway Estate. It was sold by auction in building lots, and bought by seven purchasers, who have erected the houses in the almost incredibly short space of time mentioned. Its streets include Fawcett, Cornbury, Reculver, Edale, Rutford, Goodson, and Alpine roads, with numerous cross connexions. Alpine road seems a curious misnomer, inasmuch as the land is as level as a billiard-table, and forms portion of a wide area on the south of the Thames, now occupied as market gardens, that before the embankment of the river in past ages was submerged by every tide. This river-side marsh was studded, although sparsely, with small islands, and St. Helena was probably near one or more of them, as is supposed from the fact that, in excavating, large pieces of trunks of trees have been met with, and a number of nuts perfect in form, but that crumbled to pieces on exposure to the air, or being touched. Several eighteen-pounder cannon-balls have also been found at a depth of about 4 ft. below the surface. It is surmised that there has been a navigable creek from the Thames in this locality, and that the balls were discharged from the Tower of London against hostile vessels lying in it,—possibly Dutch galliots.

The whole of the houses on the estate, with the exception of five, and corner premises, are almost identically alike in plan and appearance. The fronts have straight wall-heads, finished with a cope, a dog's tooth cornice, and a string-course. The roofs are V-shaped, with box gutters, and are covered with hollow red tiles. The houses are 24 ft. from front to back, and have each 16 ft. of frontage. Each pair of houses has a coupled addition at the back, containing the kitchen, and behind it the wash-house, a pair of closets, the water-cisterns, with wooden covers over them, being at the rear of all. The front rooms have bay-windows, finished at the angles in some cases with three-quarter stone columns and carved caps, in others by ornamental iron columns. The ground-floor windows are filled with plate-glass; the entrance doors are recessed. These "oriels" are covered with ornamental slates. The kitchens have also bay-windows. The houses are evidently intended to accommodate two families each, the first-floor back-room, as well as the kitchen on the ground-floor, being fitted with range, oven, and boiler. The rooms are small, but the houses, as regards internal accommodation, in pantry, cupboards, presses, &c., are better fitted than some of a more pretentious character, for which considerably higher rents are paid. The houses have in front a narrow strip inclosed by a coped dwarf wall, surmounted by a neat iron rail. The rents are 10s. and 12s. per week. In accordance with the requirements of the Metropolitan Buildings Act, each house has a back-yard of 100 ft. super. minimum. Many of the houses, the formations in laying out permitting, have an assignment of considerably larger areas. The walls are 9-in. The five houses of exceptional plan above referred to have basements and two-story bow-windows. The basements, from the lowness of level, have, we believe, already been found a mistake.

The property drains into the Low-level Metropolitan main sewer, which passes close by on its way to Deptford Pumping-station. Nothing has been done as yet, as may be supposed, in paving or public lighting, but in many other respects the settlement is getting completed. Pillar letter-boxes have been established; legends over doors and windows indicate the places of business of butcher, baker, grocer, tailor, shoemaker, milliner and dressmaker, plumber and glazier, dealer in tinned goods and sundries, haberdasher, greengrocer, &c. "Mangling is done here," there are "Lodgings for single men." At one place bottled wines and spirits are sold, and at another beer,—the one must not, but the other may be, "drunk on the premises." Two public-houses have been provisionally licensed. The building for one is completed, and the other is in progress. The stentorian shouts of a costermonger, which are familiar sounds in localities far off, where his voice is heard daily, are conclusive evidence of the creditable industry of that worthy.

In fine, this yearling town from present appearances gives promise, ere many more months elapse, to house a population of not much fewer than 4,000 inhabitants, or more than many market-towns, and will be entitled to take its place among the marvels of modern days. It is in contemplation, we were informed, to erect soon, not far from the same locality, a pile of model dwellings, for the accommodation of 800 families.

AN IDLER IN PARIS AND ITS SHOW.

THE rain, though to a certain extent "it raineth every day," is not so great a drawback to the enjoyment of Paris as might be expected. For have we not the Exhibition as a refuge? and when we come out the air is all the cooler and clearer, and the pavement dries up here very nearly as quickly as at Brighton. Certainly, during the cab-strike, the means of locomotion were somewhat impeded, for the few cabs that did circulate were driven by the most extraordinary Jehus, who had evidently never had the handling of reins before. And though the poor overworked horses here are far from resembling Mazeppa's fiery steed, we found ourselves every now and then making intimate acquaintance with a lamp-post, or stuck in the rails of a tramway, in danger of a tramcar passing over us ere being extricated. We were generally conveyed a few miles away from the point we had indicated as our destination; and on remonstrating with poor cabby, found he knew as much about Paris as of the Great Desert, and that our wisest plan was to trust to our own feet.

We approach the Exhibition next time by a different gate, and wander a little about the grounds ere entering it, purchase a few trifles in a Tunisian bazaar, peep in for a moment at a *real* Bedouin tent, where three of the children of Ishmael are sitting crossed-legged embroidering slippers, and spend a short time in the delightful little Pavilion of Monaco. In the middle of the pavilion a fountain is playing, and dispersed about are specimens of the quaint crockery and china-ware of Monaco, as well as a very beautifully-carved ivory mirror.

As the Spanish pavilion comes next, we look in for a moment at what is certainly one of the curiosities of the Exhibition. The columns, the arcades, the roof, are all formed out of wine bottles; indeed, the whole interior. Bottles full of wine—some pale, some dark—and as the light falls through them as they hang down like stalactites from the ceiling the effect is very curious. The very labels and corks of the bottles are brought into requisition to add to the effect. It is very amusing to watch the astonishment of the peasants and country folk when they see this; they certainly prefer it to the diamonds. The flowers and shrubs in the grounds are very beautiful, and it is almost with regret we turn into the building; but wandering about in our zigzag fashion, a halt in the furniture gallery before M. Henry Perron's splendid exhibit, reconciles us to sightseeing.

M. Henry Perron is fortunate enough to have secured an "angle" in the gallery, so he is able to give us a very perfect effect of what he calls the "Installation of a Lady of the Great World." The exhibit is supposed to be the corner of a drawing-room in some Italian palace, and this especial corner of the room is called "*Il Bueno Retiro*," or "Spot to dream in." Massive dark royal blue velvet curtains are drawn away on either side, in contrast to a lighter shade in blue silk that just peeps from underneath them, giving a somewhat tent-like look to this part of the saloon; then a loosely embroidered silk scarf, as a "velum," is slung on silken cords, and forms a sort of canopy to the beautiful couch, or "chaise longue," underneath it. The cushion is in pale pink satin, embroidered with roses of every shade and sort. A white satin coverlet, embroidered with the same flowers, is thrown carelessly over the end. A gilt cupid seems the only visible means

of support to this couch. A tiger's skin is pread on the floor; a large vase of white Algerian onyx, on a pedestal, stands near, with a palm in it; a little table of exquisite workmanship is placed near the couch, with a fan (also a work of art) and a rose thrown carelessly on it. No slightest detail has been forgotten to give the "picture" reality on the side on which the lady's eyes are supposed to rest when "dreaming" in this spot. A panel let into the wall represents Psyche asleep, though morning is just breaking. She is asleep among the clouds, of course, and one little cupid is floating up to draw the clouds of night away. Two more are sitting at her feet, trying to wake her, playing on a harp and flute, another little love is gently touching her. This graceful picture is now only an oil sketch by M. Majerolles, but is eventually to be executed in Gobelins tapestry work. An easel in carved wood, with crimson velvet draped over it, and supporting the sketch of a beautiful little girl, becomes by this arrangement, instead of an encumbrance, an elegant article of furniture. There are various other accessories that go towards completing the whole. But it is the extraordinarily "finished" arrangements of the various draperies that impress one. And all the ideas so well executed have emanated from M. Perron himself, who seems to have a high appreciation of art of a certain kind. His next exhibit is a large ebony cabinet, with bronze medallions, each a finely-finished female head, representing Sculpture, Architecture, Science, &c. It has two companion vases on pedestals. The vases are copied from originals at the Louvre, in metal *repoussé*. The cabinet is for family papers and such like, and will be unique, as no *replica* is made. His other exhibit is a large subject, that one takes at first for tapestry, but on a nearer approach it is seen to be all done by hand. It is a group *à la* Watteau, dancing, designed by M. Perron himself,—fifty women worked at it for six months; and it is as curious a specimen of modern needlework as I know of. Another singular piece of work is a portrait, supposed to be a family or historic portrait. The face is worked in Aubusson tapestry, the dress of the period the picture dates from in needlework; the ornaments are all in real stones, and the medals or chains supposed to have belonged to the individual are actually hung on the picture. The picture is unique, and fortunately is not likely to be imitated.

We leave an inspection of the very fine exhibits of M. Fourdinois and others until another day, and wander off to look at the display of silver ware at Messrs. Tiffany's, of New York. They have a most interesting collection, and an hour passes rapidly away in their domains. First of all, let me mention,—as Cyprus is still one of the topics of the day,—a very fine collection, or rather reproduction, of the Cypriot collection of antique jewelry discovered in the treasure vaults of Curium by General di Cesnola, and now owned by the Metropolitan Museum of Art in New York. General di Cesnola thus writes to the exhibitors concerning them:—"After a careful examination piece by piece of the copies you have made of the jewelry discovered by me in the island of Cyprus, it gives me the greatest pleasure and satisfaction to say your work has been most successfully executed. Were it not for your name stamped upon those you have made, I believe it would be almost impossible to decide which are the originals; and these copies so faithfully reproduce them that they must prove quite as useful for all purposes of study, or as objects of interest in representing the oldest jewelry known." The collection consists of necklaces, bracelets, rings, and so on, of graceful forms and workmanship, and one little pair of golden tortoise ear-rings (I suppose) especially attracted my attention. Messrs. Tiffany have also executed a very splendid silver service for twenty-four people, but so complete that when entirely finished it will consist of about 2,000 pieces. It seems incredible, but so it is. The service is valued at about 50,000*l.*, and belongs to Mr. Mackay. The design is very elaborate. But to my mind the objects, such as vases and jugs, decorated by the inlaying with copper niello coloured alloys, and mixed metals, are the most beautiful things in Mr. Tiffany's collection. One silver jug has in relief the gourd vine, the leaves of that lovely red brown autumn tint we all know, and formed entirely of the alloy in the metal. This work is the speciality of Messrs. Tiffany, and does them the greatest credit. There is also a fac-simile of the Bryant testimonial vase; it is shown as a specimen of intricate electrotyping after elaborate *repoussé* work. "The actual vase was presented to Mr. William Cullen Bryant, the poet-journalist, to commemorate his eightieth birthday. A committee of gentlemen representing donors in every section of the United States met in New York, where it was presented to Mr. Bryant." The design is intended to symbolise Mr. Bryant's life and character through the medium of a classic form covered with ornamentation drawn from nature, and suggested by his works. It is a very elaborate affair, illustrating his life from youth to age, and we finally leave him, his hand resting on the crowning works of his life, the translation of the "Iliad" and the "Odyssey."

We forgot to remark that some of the articles in General di Cesnola's Cyprus collection date back to the period of the occupation of the island by the Phœnicians. On a bracelet of massive gold the name of a king of Paphos is found who reigned 672 years B.C. And some of these articles date as far back as eighteen hundred years before the Christian era.

We wander from Tiffany's to Faunière Brothers. Their jewelry and silver work is not of that showy style that attracts the eye immediately, but when examined more closely you find you are looking at real works of art. For instance, there is one pendant for the neck,—a shell of sculptured sardonyx, inside which a beautifully-chiselled little Venus is crouching, a bunch of enamelled sea-weed and dropping pearls at the end complete the ornament. Lapis-lazuli ear-rings, with silver cupids, with bow and arrow in hand, also attract attention; the model of an Eastern water-carrier; an inkstand, with Love bearing the world on his shoulders; and a handsome prize, won by Count Lagrange, of racing celebrity, representing Bellerophon (and which I mistook at first for a group of St. George and the Dragon).

We naturally go over to Christofle's to look at the silver service of the Duke of Santona, a Spaniard of great wealth, the "Triumph of Amphitrite," valued at 16,000*l.*; and also at the very elaborate cabinet, in bronze, silver, and enamel, with incrustations and enamelled medallions of the principal churches. It is destined for the Vatican, and is to hold manuscripts. It has already been taken to Rome, for the late Pope to see, and has been brought back for entire completion. Odiot, Foment, Meurice, and Grant Marly have exhibits of sufficient interest to be mentioned; but having had enough of this sort of thing for one day we wander away to spend an hour most agreeably amongst the tapestry,—the Gobelins, the Aubusson, the Beauvais. We glance at each in turn (not forgetting the Tapisserie-Savonnerie of Belleville). The Gobelins, of course, must always hold the highest place; but I confess, were I purchasing, that the Aubusson is more to my taste, the tints being, I think, even more softly brilliant. There was much silk thread used in olden times in the Gobelins, but it is now all of wool, I believe. But as I purpose a visit to the manufactory soon, I shall be able to study the subject more closely. The wise assistance Government offers to what are called the "decorative arts,"—such as the porcelain manufactory at Sèvres, the glass of Baccarat (the latter establishment alone receiving a grant of 20,000*l.* per annum from Government), gives them leisure and opportunity to attain to and carry out the highest aims in general grandeur of design. To convince oneself to what a point of perfection one of these "works" may be brought, you have only,—after looking at the "Study" of a lady in a wonderful yellow dress after Fra Gonard; the copies from the "Air" and "Water" of Charles Lebrun, as well as some from Correggio Chirlandago; the eight panels of female figures, with appropriate designs, representing Fruits, Tea, Coffee, &c., and destined for the buffet at the Grand Opera,—to look well at the lovely "Selène," a female figure floating upwards and holding the new quarter moon in her hand as a bow, and then go straight off and look at the original picture by Jules Machard in the French Beaux Arts. The only things that to my mind clash with these pictures are the borders: they are too ornate and too highly-coloured. Those of Autumn have steered clear of this, and have only a simple yellow scroll as the adjunct to the picture. A splendid carpet, covering a hundred yards, and destined for the palace of Fontainebleau, completes this exhibit.

The Aubusson tapestry is simply charming, and I linger long near this spot. Two very fine specimens first strike the eye. They are two "pictures," out of four Lord Dudley has purchased, and that he has already had possession of. One subject, especially life-like, is a winter scene. The clear opaque look of the Zee, the misty appearance of the atmosphere, the snow resting on the stripped branches of the trees (looking as if the first puff of wind would blow it away), and the general wintry effect of the whole are wonderful. A girl, with a brilliant crimson skirt looped over a pale blue one, and thrown lightly over her arm, is skating towards us; whilst on the left of the scene a cavalier, on his knees, is tying a skate on to the foot of another pretty, fair-haired being, dressed in a pale green dress looped up over pink. The whole is well harmonised. The other subject is a boy on a ladder, throwing down grapes to a girl. There is also "The Message,"—a country scene, a girl receiving a white pigeon, who bears a letter under his wing (the price of this picture is only 280*l.*). A quaint idea is a sofa that forms part of a *suite* for the King of Bavaria. The whole set illustrates a kind of story,—"The Village Wedding." On the sofa you see the large old Louis XIV.-looking carriage of the lord of the manor wending its way through green lanes towards the village church, whilst the villagers stand by to see it pass, dressed in the style Watteau has immortalised. The extremely obliging and intelligent representative of this exhibit told me the chairs, which are not here, each represent a portion of the tale, such as the church, the wedding, the village feast, the dance. This also is a unique set, and is not to be reproduced for any other purchaser.

It is to be hoped that Government will appoint a competent body of gentlemen to select and purchase some of the more remarkable works of modern art here, in the shape of tapestry, bronzes, glass, and china (which, magnificent as our own exhibit is of the latter two, have yet various qualities to recommend them), for the study of the nation at the South Kensington Museum.

MEMORIAL OF SIR G. G. SCOTT.

THROUGH the liberality of Mr. Alfred Bell, of Bayford-house, Hampstead, who is one of the churchwardens of that parish, and a member of the firm of Clayton & Bell, a handsome stained-glass window has just been placed in the parish church of St. John, Hampstead, to the memory of Sir George Gilbert Scott. It is one of the gallery windows on the south side of the church, and represents a figure of St. Thomas Apostle, bearing his emblem, a square. The figure is on a white field, the entire light being bounded by a richly-coloured border, and the whole treated in pre-Renaissance character in keeping with the restored church. At the base of the window is the following inscription: "In grateful memory of Sir George Gilbert Scott, Knt., by one sometime his pupil."

ST. ALBAN'S ABBEY ROOF.

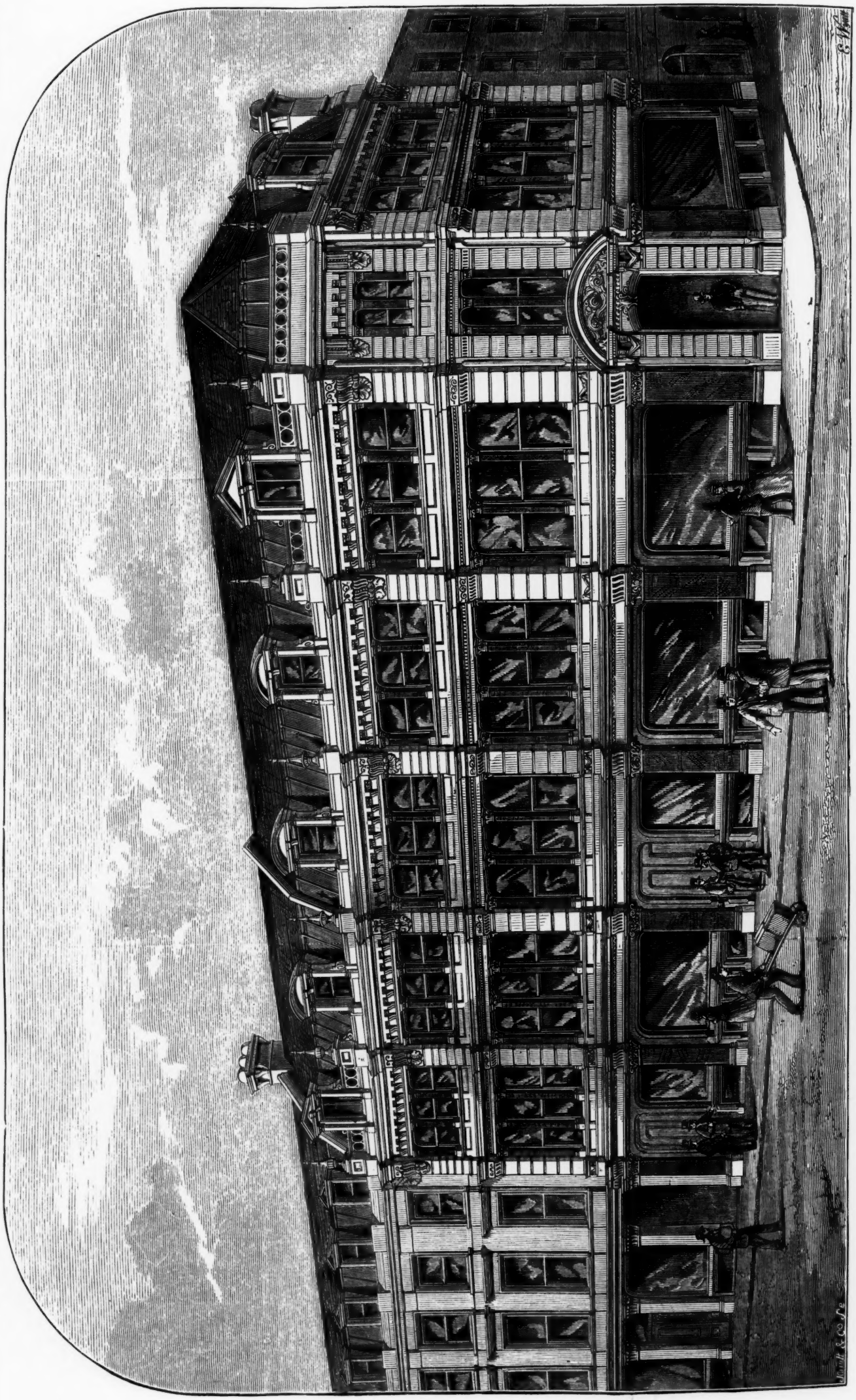
WE have received a communication on this subject from Mr. James Neale, F.S.A., but, as Mr. Neale says, it appeared last week in the *Athenæum*, and we, therefore, cannot give space for it. The writer contends, as we have done, for the maintenance of the existing line of roof. The more we consider the subject the more fully satisfied we are that the view we took was the right one, and that if the committee carry out their resolution to cover the nave with a high-pitched roof, they will make a mistake, and do a great deal of mischief.

NEW WAREHOUSES, ST. MARY AXE.

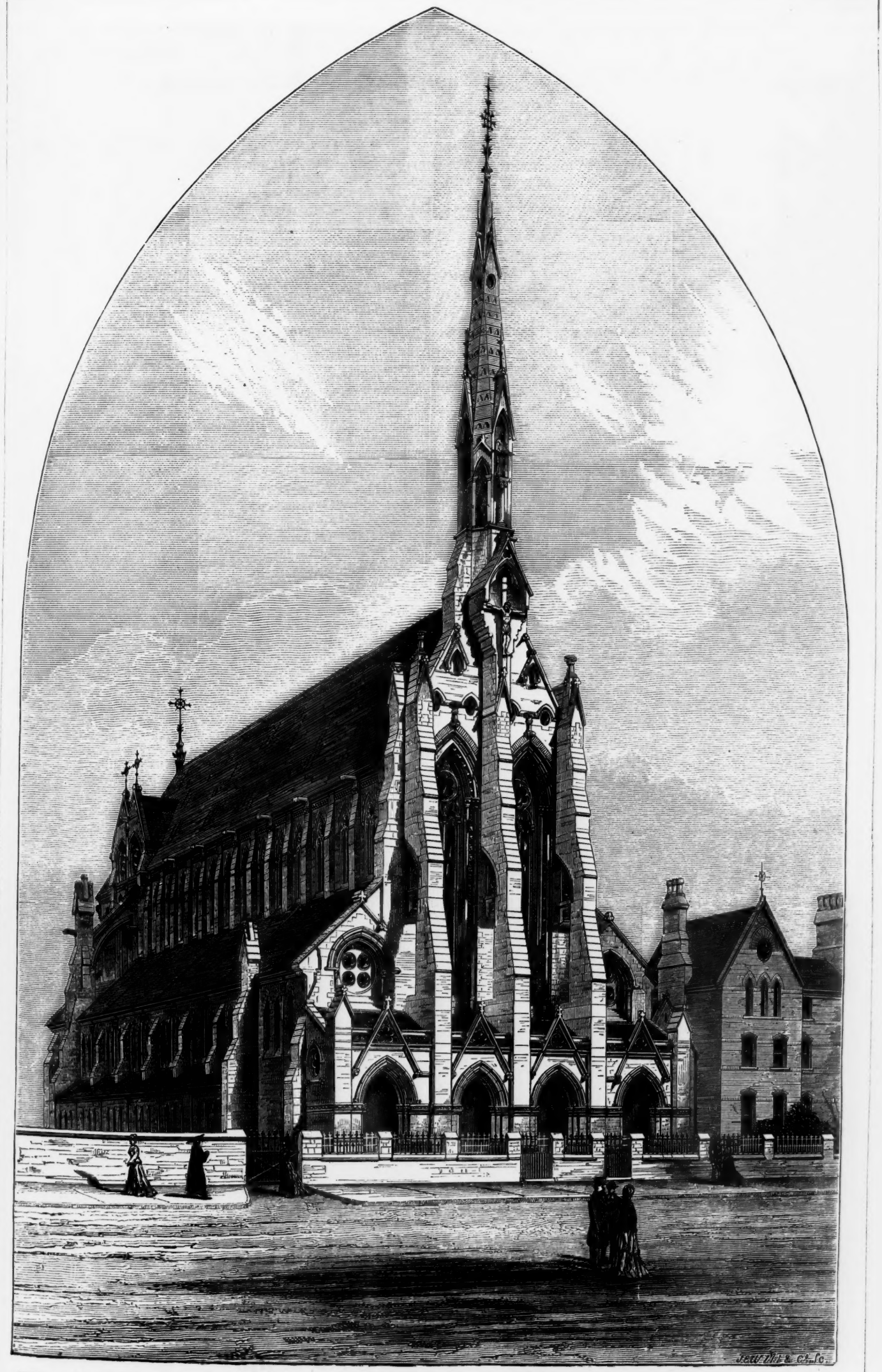
WE give in our present issue a view of Mr. Fairbank's new show-rooms, at the corner of St. Mary-Axe and Camomile-street, erected by Mr. D. Cohen, at a cost of nearly 10,000*l.*, from the designs of Mr. H. H. Collins, architect. The builders are Messrs. Kirk & Randall.

The whole of the front is constructed of stone, with red granite pilasters on each floor, and grey granite window fronts on the ground-floor, supplied by Mr. Outhwaite. The carving was executed by Mr. Sansom.

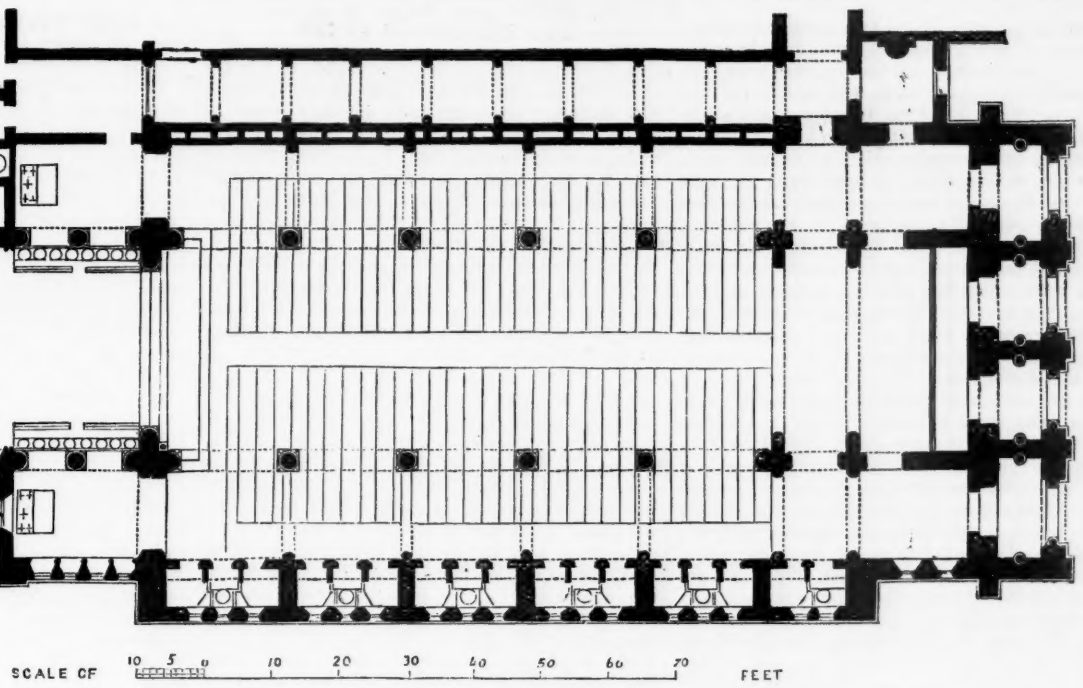
Art Exhibitions for Munich.—An International Art Exhibition is to be held in Munich next year, and thenceforth every fourth year.



NEW WAREHOUSES, ST. MARY AXE, LONDON.—MR. H. H. COLLINS, ARCHITECT.



NEW MONASTIC CHURCH, WEST GORTON, MANCHESTER.—MESSRS. PUGIN, ASHLIN, & PUGIN, ARCHITECTS.



CHURCH OF ST. FRANCIS, GORTON, NEAR MANCHESTER.—PLAN.

NEW MONASTIC CHURCH, WEST GORTON, MANCHESTER.

A MONASTERY of considerable extent has been erected in West Gorton-lane, and fronts the roadway. On the right these buildings form a quadrangle, and on the left stands the church, a view and plan of which we give. The style is Early Decorated; the church was designed by Mr. E. Welby Pugin, and is being completed by Messrs. Pugin, Ashlin, & Pugin. It was built mainly by Father Patrick, one of the lay brothers.

The dimensions are very considerable; the length is 180 ft., the width 70 ft., and the height 98 ft. At the west front are four entrance porches, with doorways recessed. The centre two will give admission into the nave of the the church, and the outer ones into the north and south aisles respectively. The aisles are separated from the nave in the west front by two lofty buttresses, nearly 70 ft. in height, and of great projection. The front is again divided by a centre buttress, which supports and merges into an elaborate bell turret rising 150 ft. from the ground. On each side of the centre buttress is a lofty three-light window filled with tracery and bold arch mouldings above. On the centre buttress is a life-sized representation of the Crucifixion, in stone, with a canopy above. The chancel has an apsidal end, and the apex of the roof is surmounted by a large figure of an angel, in copper, gilt, carrying a cross. There are side chapels at the end of the nave, which are separated from the chancel by metal screens, in the latter there will be sixteen stalls for the Fathers. The arches dividing the nave from the aisles are 30 ft. high, supported by pillars, from which stand full-sized figures of the apostles.

THE THAULOW MUSEUM.

THE Duchies of Schleswig and Holstein have for centuries been noted for the success with which the art of carving in wood was carried on there. There were few great houses which were not embellished in their architectural details, their fittings and their furniture, or in one or other of these, by the hands of native carvers, and what they were able to do in the way of ecclesiastical ornamentation may be witnessed in the celebrated altar-piece of Hans Brüggemann, in the cathedral church of the city of Schleswig. During the early portion of the present century these relics of an artistic past fell into general neglect. The carved chest, presses, tables, and other articles of domestic furniture which at one time were found in every farm-house, if not ruthlessly destroyed, were turned into the lumber-room, and allowed to go to decay and ruin. From twenty to thirty years ago, however, collectors began to appear, and to buy up at a very low price whatever they could find of these old articles in a tolerable state of preservation, and not a few of their purchases have found their way to England, as well as to other countries of Europe. Among the most diligent of the *connoisseurs* and purchasers of the old carvings was Dr. Thaulow, a professor of the history of art at Kiel University. By degrees his entire house became filled with examples, more or less rare and valuable, of the old furniture which he bought for the most part for a very small sum. Dr. Thaulow's residence, in fact, became at length one of the sights or curiosities of Kiel. The fame of its contents spread far and wide, and no stranger ever thought of leaving Kiel without paying a visit to this remarkable collection.

One of the leading organs of art in Germany long ago spoke of Dr. Thaulow's house as "The treasury of Schleswig-Holstein wood-carving." The collection, some objects of which were of the rarest character, still went on increasing until its value was estimated by connoisseurs at not less than 10,000*l*. That it was pure love of art and not a mere desire of gain that inspired the Kiel professor in his unwearied search after these neglected treasures is evidenced by the fact that he announced some time ago his intention of leaving the entire collection to the province. It was his desire to secure them for the land and district which had created them, and he felt certain that in case they were submitted to the hammer they would be dispersed, and find a home in distant cities. The conditions on which he offered the collection to the provincial estates of the Duchies were that they should erect a suitable house in Kiel to contain the various objects, and that the new museum should be brought into close relationship with the University of Kiel. The city at once offered an excellent site for the purpose, and on it was erected, after the plans of the architect, Herr Moldenschardt, a building which is described as one of the greatest ornaments of the city and of the province.

In this, its new and permanent home, the collection, which has meanwhile been added to with unwearied zeal by its founder, has at length been placed. On Saturday, the 10th August, the Provincial Estates or Assembly of the Duchies proceeded in a body by rail from Rendsburg, where they were sitting, to Kiel, in order to be present at the inaugural ceremony at which the collection was formally handed over to the province and opened to the public. Count zu Rantzau-Rastorf, who presided at the opening, delivered an enthusiastic speech on the occasion, in the course of which the president of the province informed the donor that the Emperor Wilhelm had conferred on him the distinction of raising him to the rank of a Privy Councillor. It has been determined that the institution shall bear the name of the Thaulow Museum.

ANOMALIES IN ARCHITECTS' PRACTICE.

SIR,—This is the season which, either through the diminution of the pressure on the columns of journals, or the possession, for a brief period, of something approaching to leisure by their subscribers, is favourable to correspondence on subjects of general interest. In the hope that some of my professional brethren may take up the subject which I open in this letter, and that you, Sir, may be able to find room for letters upon it, I propose to try and point out one or two inconsistencies between our customary procedure as architects, and the formal, and, if I may so say, theoretical manner in which it is supposed to be conducted, *i.e.*, between actual practice and assumed practice.

In some particulars the actual and the assumed practice very rarely vary, in others they very rarely agree. This disagreement, in nineteen cases out of twenty, is a matter of no moment; but from time to time an untoward occurrence of some sort strains the relations between employer and builder, and the difficulty which then has to be surmounted is rendered much more serious by the fact that no one has done exactly what it was theoretically assumed he would do when the contract was drawn. This evil is not a small one, and if we architects could agree upon such modifications of our assumed, if not of our actual, practice, as would make the two consistent, I am sure that not only our own comfort would be promoted, but the interests of both builders and the public would be consulted.

The first inconsistency which I will point out refers to orders for extra works. Every building contract says that such orders must be in writing. The circumstances under which work is done render it so difficult to conform to this rule that many architects have given up the attempt, while few adhere consistently to the practice even if they reduce their most important orders to writing. Builders, on the other hand, rarely ask for written orders, and thus it comes to pass that, till the final settlement, a degree of uncertainty as to what extras there will be prevails, which is neither desirable nor businesslike. I could fill a page with illustrations of this inconsistency, were it not familiar to your readers. Hardship and actual injustice often arise when a contract of this sort has been entered into and extras have occurred. The matter presses both ways upon the builder and upon the employer, but the discomfort, if not the pecuniary loss, in either case reaches the architect also.

I am not so unpractical as to propose a great alteration in procedure. The men who have not given written orders, and the builders who have not cared to press for them, will not be induced to give or to ask for them because their attention is drawn to the subject in your columns; but might not some alteration in the customary conditions of a contract be made such as would leave that document not so glaringly at variance with what is actually practicable? For example, why not drop the usual form of written order clause, but require that all extra measured work, or all such work for which a definite order in writing has not been given, shall be claimed by the builder week after week just as extra day-work is customarily claimed? I do not mean that the dimensions should be given week by week, but that notice shall be given weekly that this or that work is considered extra, and failing such notice in any week, that it will be understood that all the work going on in that week is considered by the builder as contract work. This stipulation would not be oppressive on the builder. It would, if enforced, probably cause questions of extras to be disposed of during progress, which now accumulate to the end of a job and lead to serious disagreements. At any rate, I think this ought to be the result. Some of your correspondents can, perhaps, recommend a better resource, but they will, I think, admit that some change is required.

Another discrepancy between assumption and practice is in the mode of dealing with liquidated damages for delay. Delay on the completion of a building is a constant source of heavy pecuniary loss to proprietors, but I can honestly say that in a tolerably long and varied experience I have never been concerned as pupil, clerk, architect, witness, or arbitrator in a single case where a single shilling was actually deducted from a builder's bill for such damage, though I have often known it threatened; and I believe most of your readers will say the same. Does it not seem high time so to modify the usual conditions of contract, that they may be capable of being customarily enforced instead of customarily abandoned? The remedy here may possibly be found in some plan for extending the time in proportion to the amount of added or varied works, on a definite scale,—one day of time for each twenty, or fifty, or hundred pounds of variation, as the case may be. At any rate, some remedy must exist, and if we can find it out there will be advantage in adopting it.

There is another inconsistency between assumed and actual practice to which I will only allude. It is as wide as either of the others, but, so far as I have seen, it does not seem, in practice, to lead so obviously to serious inconvenience: I allude to the undefined position which the bill of quantities holds in our system of arrangement. It is the actual basis of the contract; it forms no part of the formal basis. In a case of a lawsuit or reference, it is the first document turned to for information, yet it has no theoretical *status* at all. This is a condition of things which is open to improvement, to say the least of it; and had I not already made this letter a long one, it would be interesting to inquire a little into the rights and wrongs of it. So wide and many-sided a subject would, however, be peculiarly fitted for discussion. The evils rising out of it are none the less serious that they do not lie on the surface. It is looked upon by builders, building surveyors, and architects from very different points of view, and it seems likely sooner or later to undergo some sort of modification.

T. ROGER SMITH.

Roman Remains at Usk.—At the annual meeting of the Monmouthshire and Caerleon Antiquarian Society, held at Pembridge Castle, Mr. A. D. Berrington, of Pontygoitree, described some Roman remains which he had found at Usk, in the course of excavations in that town. He said he had discovered distinct traces of three Roman roads, with the rare adjuncts of side-walks, and the remains of a Roman manufacturing town. This town had been of wooden houses, which had been burnt down, as was shown by a considerable bed of charcoal, which was covered with what was apparently the burnt remains of thatched roofs. Another interesting discovery was the monumental stone which had been placed over a child (three years old) of a soldier of the Second Augustan Legion, of which legion there were other evidences found in the course of the excavations.

THE HEALTH OF TENBY.

SIR,—My attention has been called to a letter published in your journal of the 24th ult., from a Mr. Burns, respecting the sanitary state of Tenby. Will you allow me, as briefly as possible, to reply to the same? I would premise that Mr. Burns was some time ago employed by the corporation of Tenby. His work, as I am informed, was not well executed, and his charge was disputed. An action, subsequently brought, was referred to arbitration, and the arbitrator's award has been for some time past ready for Mr. Burns to take up. This, however, for some reason or another, he hesitates to do. Perhaps he fears that the decision is against him. A near relative of Mr. Burns was, not long ago, collector of rates for the borough of Tenby, but was dismissed from his appointment in consequence of reasons, to which I will not further allude. A nephew of Mr. Burns brought an unsuccessful action against the corporation, and was condemned in costs, which he has not yet paid. I mention these little matters to show the animus that inspired the author of the letter. And now as to the facts. Mr. Burns condemns the drainage and the water-supply, deducing from his statements the (supposed) high rate of mortality of Tenby.

The Registrar-General's return for the quarter ending June 30 gives the death-rate of Tenby at 26·8 per 1,000, and the deaths from zymotic diseases at 3·59 per 1,000. These high rates are produced by the circumstance that thirteen rural parishes and a large, poor, and unhealthy parish in the borough of Pembroke (ten miles distant) are attached to it in forming the sub-district. Over these parishes the sanitary authority of Tenby has no control whatever, and cannot therefore be blamed for their defective sanitation, if such exists. The actual number of deaths in the town of Tenby from July 1st, 1877, to June 30th, 1878, was 90. At a low estimate the population was 5,500, exclusive of visitors, the actual death-rate thus being 16·4 per 1,000. In 1871 the census return gave the number as 3,810, since which time 179 new houses, chiefly large ones, have been built and occupied, whilst for the same period the births have exceeded the deaths by an average of 40 per annum. Although we exclude visitors from our estimated population, we cannot exclude their deaths from our mortality lists, and we find that of the 90 who died ten were visitors. This reduces the death-rate of resident inhabitants to 14·6 per 1,000. Seven deaths occurred during the year from zymotic diseases, viz., two from convulsions during whooping-cough, one from pneumonia following measles, two from diphtheria (one brought from a distant town already suffering from the disease, the other a single case occurring many months after), and two from "fever." This gives a death-rate of 1·3 per 1,000, instead of 3·59, as published in the Registrar-General's return. Making a further analysis, I find that of the 90 deaths, 19 were under one year and 28 over sixty years of age, 8 being over eighty. Of the causes of death, 14 persons died of diseases of the brain, 31 of affections of the heart and lungs, 19 of kidney, bowel, and liver diseases, 3 of childbirth or maladies connected therewith, 2 from accident, and 7 from zymotic diseases, as before mentioned. Climatic influences cannot be credited with any of the deaths of the 10 visitors; for 3 died of apoplexy, 2 of intemperance, 2 of chronic disease of the kidneys, 1 of phthisis, one (an infant) of atrophy, and one child of diphtheria (the imported case already referred to). In 1873 there were 7 deaths from zymotic diseases; in 1874, *one;* in 1875, eight; in 1876, *one*. I have not the return for 1877.

Now, as to the water-supply. Mr. Burns has pictured every possible and impossible source of contamination that may affect the reservoirs. He has drawn largely on his imagination with regard to "*tritons*" and other beasts, but a grain of truth is worth a ton of fiction, and as a matter of fact the water supplied to the people of Tenby is remarkably pure. Here is what Mr. Wilkinson of London said of it in 1849 (since which time the reservoirs have been much improved, new ones added, and filter-beds of gravel, charcoal, and sand constructed, to render it still more pure),—"The result of the analysis proves this to be a very pure *natural* water, the proportion of salts (1 part in 7,000) being so much smaller than is usually met with, that the tests will scarcely detect their presence until the water is concentrated by evaporation. It is seldom that water is met with in so great a state of purity, or so well adapted for every purpose for which it is required."

Recent analysis has confirmed the opinion cited above. So much for Mr. Burns's *tritons!*

Next, Mr. Burns falls foul of the drainage. The town of Tenby is built on the margin of a rocky peninsula rising to nearly 100 ft. above the sea. With the exception of one or two thinly-populated parts, a perfect system of drainage exists. There are no ashpits, all the house refuse being carted away daily to a farm some distance from the town. The sewers have a very considerable incline towards the sea, where most of the sewage is ultimately conveyed on one side by a large culvert, and on the other by iron pipes. The strong tides rapidly carry everything away. A portion of the sewage is used to fertilise some land about a mile from the town. As to the ventilation of the sewers, with a fall such as that indicated it is unnecessary. Mr. Burns's interesting description of the way in which the sea acts as a force-pump, driving the foul gases back into the buildings, would be very telling if it were true. As a matter of fact, however, all the dwelling-houses have trapped drains, and most of them ventilators connected with the closets. The main culvert has large gratings at intervals which entirely prevent any back pressure of gas.

I will not trespass further on your space, though I could say much more on behalf of this lovely and (in spite of Mr. Burns's assertions to the contrary) healthy watering-place.

DOUGLAS A. REID, M.D.

MATHEMATICS AND THE FINE ARTS.

SIR,—It is curious to note how devotedly one may labour through the years to a particular end, with very little effect. I think I may say that, for the last twenty or more years, the columns of the *Builder* will bear witness to my enunciation of the mathematical theory of the fine arts, which now finds completion in my science of æsthetics. But the mathematical theory, as I have enunciated it, has always been accompanied with the novel and broad generalisation, that the *form* of phenomena, of our consciousness, of our experience, of our knowledge, is *quantitative*. This generalisation, alone, renders the universality of the application of the mathematics intelligible. We are fundamentally mathematicians without knowing it. To the vulgar mind the mathematics imply only geometrical figures; but to the mathematician this is but a special section; and when Mr. Spottiswoode speaks of the mathematics, as applied to art, he does not mean that a nose may be struck with a pair of compasses, but that every different form of nose fundamentally inheres in a difference of propositions, is constituted in different ratios. In fact, the *regular* geometrical curves exist, I believe I may say, nowhere but in the mind, and approximately in artificial construction. They are not *natural* forms, in the narrow sense in which artists and critics for the most part understand the word *nature*, but only in that wider or philosophical sense in which the word *nature* signifies "the all."

In a letter of last Saturday, on this very topic, Mr. Conder refers to my project for a Gallery of Autotypes, instead of a Museum of Casts, for the illustration of the history of art. I have not the slightest doubt that what Mr. Conder says about the impossibility of obtaining the precise measures of the things themselves from photo's is perfectly correct. But neither is it possible to obtain correct measurements from plaster casts. These are subject to warping, to contractions, and to displacements. Autotypes, however, would furnish the history, not only of sculpture, but also of painting and of architecture. Mr. Conder forgets that the Gallery of Casts was specially asked for for the illustration of lectures on the history of Grecian sculpture, and not for the benefit of students of the fine arts. For the study of art we have the matchless collection at the British Museum, the supply of casts at the Royal Academy, at South Kensington, at the Slade School, at the Crystal Palace, and at all the provincial art schools; and yet the cry is, "More casts! more casts!" Moreover, for instruction in art, I maintain that example is powerless to raise other than a generation of sorry copyists. Europe has been acquainted with all the celebrated works of antiquity for centuries. It has carefully regis-

tered and conned the measures of all the celebrated antiques, but it has never approached them. The fact is, it is of little use, seeing what was done; what we want above all things to know is, why and how it was done. We want to know the motives which guided the Grecian artist, and upon this point museums of antique art maintain the silence of the grave.

Seeing, then, that we have already sufficient casts for the art student, the cheaper and more comprehensive project which I have put forward would, I think, be amply sufficient, if carried out, to gratify public curiosity, and to furnish illustrations to lectures on the history of the fine arts.

W. CAVE THOMAS.

OUR LEAD MINES AND THEIR PRODUCE.

IT is true that our lead-mines are of subsidiary importance in the ranks of the mineral industries of Great Britain, but they are yet important, both in the number of the workmen they employ and in the extent to which they benefit wide tracts of country. The produce of these mines varies from year to year, the strata in which lead ore is found differs considerably, and the proportion in which some of the districts contribute to the output also changes; but, speaking generally, the statistics which record the actual output of the mines for the latest year for which official returns are available will afford a very fair idea of our British lead-mining industries. Taking for a time the lead-mines in the limestone formation, in the slaty rocks, and in granite, we have a total of 392 lead-mines in the United Kingdom. Out of these, four productive mines are in Scotland and one in Ireland. About 126 are in Wales, and the numbers in the English districts are as follows:—Cornwall, 16 mines; Devonshire, 4; Somersetshire, 2; Derbyshire, 140; Shropshire, 7; Cumberland, 25; Yorkshire, 23; Durham and Northumberland, 28; and Westmoreland, 6. But though these are the numbers of mines, we shall find that the actual output varies very greatly. In Cornwall, for instance, whilst one mine has an output of only 11 cwt. of lead ore, another has an output of over 1,500 tons, and there are similar instances of the "lottery of lead-mining" in other counties and districts.

Taking the various districts in order, we find that Cornwall has a total output of 2,727 tons of lead ore; and in company with this county, that of Devon may be included, which produced 437 tons of lead ore,—the most productive in the two counties being the West Chiverton and old Treburgett mines. Coming to Somersetshire, we find that two mines produced 578 tons; Derbyshire has had its lead-mines so long worked that there must be signs of exhaustion in some instances, and we find that the produce of its many mines is 2,264 tons only. Shropshire, enclosing its "Roman Gravels," Snailbeach, and Tankerville mines, is a noted lead-bearing county, and the produce of over 7,713 tons proves that there is ground for the fame. Cumberland yields 2,555 tons, and the dales of Yorkshire contribute the bulk of the 4,198 tons it brings to bank. The high moorlands which range from Yorkshire to the Border land give up from their limestone very great quantities of lead,—a fourth of the whole of that raised in the kingdom. The counties of Durham and Northumberland have an output of 23,285 tons, the Weardale mines of the Beaumont family alone producing 7,987 tons, and the Teesdale mines of the London Lead Company being also very productive. In Westmoreland, we have an output of 1,844 tons from its six mines, and this concludes the list of our English lead-mining districts. In Wales, Cardiganshire yields 5,961 tons; Carmarthenshire, 636 tons; Pembrokeshire, 15 tons; Radnorshire, 71 tons; Merionethshire, 60 tons; Denbighshire, 3,247 tons; Montgomeryshire, 9,041 tons — chiefly from the Van Mines; Breconshire, 35 tons; Flintshire, 2,716 tons; Carnarvonshire, 1,439 tons; and the Isle of Man contributes 4,353 tons; In Ireland one mine in Wicklow yields 1,825 tons; and in Scotland, Lanarkshire produces 2,353 tons; Kirkcudbright, 455 tons; and Dumfriesshire, 1,102 tons. We have thus, with parts of tons, a gross total of 79,096 tons of lead ore. The yield of lead from this was 58,667 tons; and the silver extracted was 483,422 ounces.

Over 15,000 persons are employed in the lead-mines of England and Wales, 546 being females. A comparatively large proportion of the remainder are youths under twenty years of age,—the number of males under twenty being 3,131. At the time of the last census the number of lead-miners was highest between twenty and twenty-five; above forty-five there were not a tenth of the total; above fifty-five, about a thirtieth part; and above sixty-five, little more than a two-hundredth part. The mortality of the miners in metalliferous mines, as a whole, is very much greater than that of the general population, or even than that of the coal-miner; and this fact has given rise to several expedients to lessen the exposure to the deleterious influences of the mine. In the great lead-mining district of the North, it is no unfrequent practice to limit the working week of the lead-miner to about forty hours, and where this is the case the working "week" is usually compressed into four or five days, and some of the lead-miners spend the remainder of the working week in agricultural or other outdoor and healthy employment. This is to be borne in mind when the low average of wages earned in the metalliferous mines is known, but there is considerable variation in the various parts of the country which give the details for the average. The death-rate by accident in the metalliferous mines, it may be added, is very greatly below that of the coal-mines,—one of the most fruitful causes of death in the latter,—explosions by marsh gas or fire-damp being absent in the latter.

THE LATE MR. BENJAMIN COLLS.

MR. COLLS, the head of the building firm of Messrs. Colls & Sons, of Moorgate-street and Camberwell, died suddenly on the 25th ult., at Bray, whilst on his return from an official visit, as a member of the Corporation of London, to the estates of the Irish Society at Londonderry and Coleraine. He was elected a member of the Common Council for the Ward of Coleman-street in 1867, and was at the time of his death chairman of the City Lands Committee, or "First Commoner" of the Corporation. He was sixty-three years of age, and highly esteemed. The funeral took place at Norwood Cemetery on Saturday. The works of the firm at Camberwell were entirely closed throughout the day, and several of the men attended the funeral. A long line of carriages joined in the funeral *cortège*, containing several members of the Corporation, and also members of the Camberwell Vestry, and of the Camberwell Board of Guardians, the deceased having been a member of both the last-named bodies for several years, but from which he some time ago retired.

JEDBURGH ABBEY.

THE nave of Jedburgh Abbey has long been disfigured by an excrescence of modern masonry. After the Reformation, the Reformers worshipped under the tower of the Abbey, and, in 1671, when Presbyterianism had given way to Episcopacy, this church was left for "ane capacious church," newly built in the west end of the nave. The latter church had no galleries originally, but in 1727 Provosts Richardson and Douglas obtained "liberty to build lofts over the localities of the Marquis of Lothian, Sir J. Rutherford, and Bonjedward." In 1792-93 the church was greatly altered in appearance, both externally and internally.

The late Marquis of Lothian, who regarded Jedburgh Abbey as one of the finest of the abbeys of Scotland, long cherished the hope of seeing it freed from the barbarous modern masonry; and at last a circumstance occurred which led to this being done, though it was not his lordship's lot to see the work accomplished. Difficulties which had arisen from a proposal to reallocate the sittings, and to extend and improve the old church, led to the Marquis making an offer to bear the whole expense of a new church in lieu of the old one, and this proposal was ultimately accepted. His lordship died before the necessary negotiations were completed, but the present Marquis determined to carry out the wishes of his lamented brother.

Shortly after the new church had been opened for public worship, the work in connexion with the removal of the old church from the Abbey was commenced, and we learn from a long and interesting article in the *Scotsman* that on taking down the walls of the old parish church a great number of beautifully-carved and moulded stones were discovered. The carved stones were all Norman transition work, and exhibit fine specimens of the chevron, the cable, the bone, the dog-tooth, the star, and other ornaments of the period. By the removal of these walls the whole nave is now seen from end to end. The basement story consists of clustered pillars with deeply-moulded pointed arches; the triforium of a subdivided arcade, the including arches being semicircular, while the dividing ones are pointed; and the clearstory of a detached arcade of thirty-six pointed arches, the wall behind every alternate two being pierced for windows. The length of the nave is 130 ft., and the height from the floor to the wall-head 50 ft. Along the whole extent of the Abbey that was included in the parish church, every vestige of the groinings of the side aisles had been knocked away, several of the foliated capitals were sorely disfigured, and the clustered pillars had been cut into for the purpose of resting the joists of the galleries. To show the proportions of the nave, the whole of the moulded base of the north aisle wall, which had been all destroyed, save a few inches, has been restored, as also a considerable portion of the south aisle wall. There has been inserted in the latter a *fac-simile* of the beautiful cloister doorway, which has of recent years become very much decayed. This doorway has long been looked upon as unique, and the late Sir Gilbert Scott, alluding to this and the great western doorway, said that they "are two of the most exquisite gems of architectural art in this island." The new doorway was erected in accordance with drawings by Mr. Robert Anderson, architect, Edinburgh, under whose direction all the recent works of restoration on the Abbey have been carried out.

Much anxiety was felt as to the safety of the tower, the two north piers of which were in anything but a satisfactory state. The present tower is an erection of the latter part of the fifteenth century, but the north piers and a small portion of wall above them belong to the first half of the twelfth century. The north-east pier is almost wholly encased in modern masonry, and there is a wall of the same kind between that and the north-west pier. This modern building is a portion of the church that was used at the time of the Reformation, and for more than a hundred years afterwards, and it has been allowed to remain simply because it was a support to the tower. Even as early as the year 1636, one of these "pryme pillars" was in a dangerous state, and John Mill, "a maister of work," was brought from Edinburgh for the purpose of getting his "advyce to sie with some masons quhat wer the dangers of the house, and quhat way it micht be repairit." At one time it was seriously considered whether or not it would be well to attempt to restore the north piers, but there were difficulties in the way, more especially as the north wall of the tower was not in a good state. Mr. Anderson, along with the late Sir Gilbert Scott, made a minute examination of the tower, and the opinion then come to was that it would be possible to shore up the tower and to put in new piers, but that it would not be without hazard. On the north piers being cut into, they were found to be, like many belonging to the Norman period, not solid masonry, but external walls or facings of ashlar-work, having the core filled with grouted rubble and gravel. The idea of restoring these piers having been abandoned for the present, steps were taken for the preservation of the tower by other means. One of the most important steps towards this object was the removal of the belfry from the top of the north wall, which would lighten the weakest part by about 150 tons of masonry. The belfry consisted of three distinct parts, namely, a central octagonal tower, which rose 20 ft. above the wall-head, and an open bell-cot on each side. To support the north-west pier a brick buttress has been thrown up against it, and the north-east one is supported by strong wooden beams placed in such a position as will best resist any pressure they may have to bear. Around the base of nearly every pillar, both in the nave and choir, concrete was laid, so as to prevent any sinking at the foundations. Among the other improvements effected was the removal of a large quantity of earth from around the north transept, by which the beautiful moulded base of that part has been exposed to view.

Brighton Exhibition of Modern Pictures. The fifth annual exhibition in the Pavilion Picture Gallery has been opened. It consists of 670 pictures, and includes a sprinkling of works by well-known artists.

ART IN IRELAND.

THE trustees and judges appointed for carrying into effect the trusts of the will of the late Captain George Archibald Taylor, in reference to the income arising from the sum bequeathed by him for the promotion of art in Ireland, announce the terms upon which 120*l.* will be awarded in the year 1879 for two scholarships and two prizes to art students The following extracts from the scheme as settled by the Court of Chancery in Ireland describe the amount and application of the fund at the disposal of the trustees and judges:—

The dividends of the fund (3,692*l.* 4s. 1d. Government Three per Cent. Stock) shall be applied, after allowing for the necessary expenses of the trust, to the endowment of scholarships and money prizes, or either, which shall be open to all students of art not exceeding twenty-five years of age, who shall have attended for twelve months at least a School of Art in Ireland, or who, being of Irish birth, shall have attended for the like period a School of Art in Great Britain or elsewhere, and who shall produce at the exhibition hereinafter mentioned a work or works of art displaying sufficient merit, or a fair promise of future excellence. In case a scholarship shall be awarded to any student for a period of more than one year, the successful competitor shall, if required, in each succeeding year while the scholarship is held, satisfy the trustees and the Royal Dublin Society that he or she is continuing the study of art.

The following are the arrangements for the distribution of the funds for the year 1879:—

A sum of 95*l.* to be applied to the formation of two scholarships, one of the value of 60*l.* and the other of 35*l.*, to be open to students, male and female, under the conditions of the scheme; also two prizes, one of the value of 15*l.* and the other of 10*l.* In the event of very marked talent being displayed by competitors for the scholarships, with promise of future excellence, it shall be discretionary in the trustees and judges to continue the scholarship for a second or third year, and, if advisable, to augment the amount. The exhibition of works in competition for prizes and scholarships is fixed to be held on Thursday, the 17th of April, 1879. Such works must be sent in to Leinster House not later than Saturday, the 12th of April, 1879. The only limitation as to subject fixed by the judges for the competition of 1879 is as follows:—The pictures must be either (1) figure compositions containing not less than three figures, or (2) landscapes or sea pieces. The size of works in competition shall not be less than 2 ft. by 1 ft. 6 in.; they may be executed either in oils or water-colours, and must be unframed. The prize of 10*l.* is to be for the best work, without limitation as to subject, and such prize cannot be awarded to either of the works which shall have gained a scholarship. The judges are Mr. Thomas N. Deane, R.H.A., appointed by the Royal Dublin Society; Mr. Thomas Alfred Jones, P.R.H.A., appointed by the Royal Hibernian Academy; and Mr. Henry E. Doyle, R.H.A., Director of the National Gallery, appointed by the Governors of the National Gallery of Ireland.

"THE DECORATION OF ST. PAUL'S: A NEW VIEW."

SIR,—"Civis" would appear to be exceedingly aggrieved at my disparaging Stevens's talents, and at the impediments I have thrown in the way of the committee's present notions being immediately carried out. My opposition to the committee's project is certainly most determined,—"Civis" terms it factious,—but after a perusal of this letter I will leave you, sir, to determine whether my opposition to that project deserves to be thus characterised.

"Civis" is aggrieved at my disparagement of Stevens's design, but he would, nevertheless, himself, without the slightest compunction, utterly erase Thornhill's work, and thereby discredit the reputation of a very talented painter, and to a far greater extent than anything I have said of, or have proposed to do, with Stevens's design. The letter of "Civis" is another instance of that blind infatuation which strains at a gnat and swallows a camel.

Stevens himself never, that I can learn, put forward his design. We do not know even what he thought of it; whether it was merely, as it appears to be, a first crude notion, or a matured scheme. It has simply by some means been discovered and brought to public notice by the committee. The public, therefore, is in nowise committed to accept or to follow it. But the public and the profession are bound to consider whether it be either politic or in good taste to allow Thornhill's work, with a century's sanction,—nay, *with Wren's sanction upon it*,—to be utterly swept away,—whether it be expedient to reverse the judgment of the past; to discredit the fame of the only painter Member of Parliament; of an artist who died in the odour of British fame, and whose name has become a household word. Thornhill's work was prodigious for the times in which he lived; and this is an important consideration to be taken into account in estimating his position as a painter. It is possible that the world may ultimately decide that all old things shall make way for the new and the better, but the world has not yet come to that uncompromising view. The Italians did not destroy the puerilities of art when art had come to years of discretion. And men of culture are now willing to let Gothic barbarities remain in window and gurgoyle when they are most sorely tempted to become iconoclasts. We retain many things, not because they are beautiful, but because we feel bound to venerate even the weaknesses of our art ancestry. We should, therefore, be inconsistent, and completely at variance with established custom, to permit Thornhill's work to be ruthlessly erased, and the more so when the whole weight of evidence goes to show that that work is the right thing for the place.

In the foregoing remarks, I have simply dealt with the ethics of the question. There is, however, an array of facts in support of my views which is still more formidable. Can the committee, we ask ourselves, have given any very serious attention to the subject? Can they have given themselves very much trouble to acquaint themselves with the history of the decoration of the dome of St. Paul's? Do they know that Thornhill designed and painted the dome with Wren's full knowledge; that Wren and Thornhill were in office together; that the figure-subjects were designed to be painted in colour, but that this, the artist's intention, was frustrated by the opposition of the clergy; that Thornhill himself was also an architect, and that he frightened a great many architects of the period by threatening to make architecture his sole profession? What value, I say, are we to set on the protestations of those who have the conduct of this affair, when, in the face of the foregoing facts, they state that they are anxious to follow out Wren's wishes, or what shall we say of the opinion of those who object to the un-architectural arrangement of Thornhill's scheme of decoration, when that was executed under the eyes of Wren, and by a painter who was himself esteemed as no mean architect? The committee, and all who shall assist, in the face of these stubborn facts, to substitute their own pet projects will incur a grave responsibility, and, I venture to predict, an extent of future odium which they little suspect.

I have quoted the proverb, "straining at a gnat and swallowing a camel," but I am quite willing, if "Civis" object to the extreme disparity of the simile, to give, out of courtesy, a new value to the reading, and to say that in his case it should be straining at a camel and swallowing a camel. Still his letter remains one of those frequent illustrations of looking at a question from one only point of view. He forgets that the tenderness which he exhibits for Stevens's fame ought also to be extended to Thornhill's. And, in conclusion, I would admonish him to do unto Thornhill's work as he would have done by Stevens's. I would also have him consider the full import of the declaration of the Apostle to whom our grand cathedral is dedicated,—"*Civis Romanus sum.*"

METER.

THE WATER-SUPPLY OF HEXHAM.

MR. JOHN THORNHILL HARRISON, C.E., one of the engineering inspectors to the Local Government Board, held an inquiry on August 26th, relative to an application by the Local Board of Health for a loan of 3,500*l.*, to carry out additional works of water-supply. The scheme, prepared by Mr. E. Brown, C.E., Newcastle-upon-Tyne, was investigated, along with two others, by Mr. Harrison, at an inquiry held by him in April, 1877. Mr. Brown now again gave evidence as to the insufficiency of the existing drainage area, and was supported by Mr. John S. Hodgson, C.E., now residing at Hexham, who gave conclusive evidence regarding the restricted use of water for sewer-flushing and other sanitary purposes. Under his advice new and expensive flushing arrangements had been applied to the whole sewerage system last year, but these were not adequately made use of, owing to the way in which the water was husbanded. Dr. Jackson, medical officer of health, testified as to the connexion between an intermittent water-supply (in times of scarcity) and the outbreak of typhoid fever in 1874 and 1876, and corroborated Mr. Hodgson's evidence respecting the neglect of sewer-flushing and street-watering. Objections to the scheme were handed in to the inspector, and the Local Board's scientific witnesses were subjected to prolonged cross-examination. Mr. Harrison stated that he would report fully to the Local Government Board, and the inquiry, which extended over five hours, then terminated.

CONTRACT.

GOODSON *v.* GIBBINS.

THE plaintiff in this case (heard in the Bow County Court), Mr. Fraser Goodson, a timber merchant, of Limehouse-cut, sought to recover of the defendant, a brickmaker, of Sittingbourne, the sum of 18*l.* 19s. 6d. for a deficiency in quantity of bricks ordered and paid for, and for their inferior quality. Mr. Brennen, barrister, appeared for the plaintiff; and Mr. Gibson, solicitor, for the defendant.

The plaintiff stated that he was told by a Mr. Lunn that the defendant had a quantity of bricks for sale, and he arranged with Mr. Lunn and the defendant's agent, Mr. Nash, to purchase 200,000 of them, 20,000 to be "grizzled" bricks, and 22,000 stock bricks, to be delivered at Mason's-wharf, Stratford. Some were delivered at the end of May last, and the next morning the defendant sent a man for a check for the bricks delivered, which he said were 42,000. He wrote out a cheque for 79*l.* 17s., being the proper amount less 2½ per cent. for cash payment, and the next day he went and examined them. He then found that they were of a very inferior quality, and that instead of there being 42,000, there were only 36,237, and out of these there were 30,291 grizzles and rough stocks, whereas there should only have been 20,000 grizzles. There were also a number of flawed bricks amongst the stock, reducing the number of stocks to 3,480. Plaintiff's manager said he examined the bricks, and found them of a very inferior quality. In his opinion they were just as they had been taken from the furnace, and never had been sorted at all.

Mr. Lunn said when he gave the order for them it was agreed that they should be good stocks and grizzles.

Alfred Butler, foreman to the defendant, said he had been in the brick trade nearly forty years. He had to superintend the loading of the bricks supplied to the plaintiff, and would swear that 42,000 were placed in the barge. The whole of the bricks were good common stock bricks. There were, as a matter of course, some inferior bricks, but there was not an unusually large proportion in those sent to the plaintiff.

Mr. Nash said when the arrangement was made between himself and Mr. Lunn for the purchase of the bricks, he told him they would be good but rough, and he showed him a rough stock brick as a sample of what they would be.

The Judge said he was of opinion that plaintiff had made out his case, and gave judgment in his favour for the amount claimed, with costs.

ALLHALLOWS CHURCH, TOTTENHAM.

SIR,—Believing you take a great interest in ancient buildings, will you kindly allow the writer to inquire, through your columns, if there is not a law in existence at the present time to prevent vaults and tombstones being bodily taken away (with their contents) from their original positions, and mystifying others against a wall like a row of herrings on the opposite side of the yard, recording the resting-places of bodies where the remains are not? This certainly is an impious act, worthy of those who were the cause of it, the mutilated vaults being minus.

Again, the escutcheons which used to adorn the interior of the church are there no more. What has become of them, with some fine old brasses once there located before the mutilation was begun? The visitor to this once beautiful building is also horrified at beholding the once lovely green and soothing ivy, which embraces the old steeple or belfry, gradually dying and disappearing through the violence of the spoiler. And even now it is rumoured that the property of God's Acre is about being desecrated or outraged to please the notions, it is said, of an enthusiast of limited ideas.

Please insert this communication in your columns, in the hope you may be the first to scotch enemies.

The writer and some inhabitants of Tottenham think it would be interesting to know if all the accounts of these alterations were thoroughly understood, especially after the defalcations which have happened at Tottenham and Edmonton recently.

CYCLOPS.

Forfar.—A new Episcopal church is to be built here, from plans by Mr. R. Anderson, architect, Edinburgh. The cost is to be 6,000*l.*

LEEDS TOWN-HALL.

THE interior of Leeds Town-hall has been undergoing repair and redecoration, at the hands of Messrs. Roodhouse & Sons, of that town.

The dimensions of the Victoria Hall are as follows:—Length, 162 ft.; width, 71 ft.; height, 75 ft. The vestibule is 44 ft. square and 72 ft. high. The hall was opened by her Majesty Queen Victoria on the 7th of September, 1858, and very little has been done in repairs till the present time.

The ceiling of the hall is semicircular, and divided into five bays, decorated and gilded, and supported by Corinthian columns, the caps of which and entablature above are richly gilt. The wall space between each cluster of columns is formed into panels, with border of lighter colour than the ground. Above the panels a sub-frieze is formed, bearing suitable Latin and English phrases alternated, as "Magna Charta," "Weave truth with trust," &c., on a dark lake ground with gold-colour antique letters. Above this, and forming the frieze of the cornice, is inserted an imitation of Devonshire marble. The bases on which the columns stand, and which form a dado of 8 ft. all round the hall, are painted in imitation of marbles; the plinth is porphyry, above that is a margin of granite, and over that a moulding of Sicilian. The panels are verd antique, and the stiles of Ross of Mull. The shafts, the columns of which are marbled a rich Rosso-antico, are varnished in the ordinary way, then felted down with ground pumice-stone and deadened, giving a semi-polished appearance without the harsh glare usually seen on polished or varnished work, and producing a good effect. The bases of these columns are black, with gold torus mouldings. At the south end of the hall, over the new gallery, are five panels with hand-painted decorations; the central one contains the Leeds arms; to the left are the Clothworkers' arms; to the right, the Ironworkers' arms; the outer ones are decorated with Mercury's mace.

The organ, which is one of the largest and best in the country, is decorated in soft colours and very richly gilded,—the ornament being outlined. The carved festoons and figures are gilded in solid, the radiation of central circle being relieved with metal; the mouths of the pipes are decorated alternately blue and red, with gold enrichments. The semi-dome over the organ is pale blue and starred with gold. The vestibule is decorated in much the same manner as the Victoria Hall.

The scheme of colouring is lighter than it was previously, and of a different tone.

Messrs. Strode's patent sunlights have been introduced into the hall, and fixed by Messrs. Nelson & Sons, of Leeds.

OPEN-MOUTHED PIPES *v.* VENTILATORS.

SIR,—Recent experiments seem to result mainly in an unedifying jumble of figures. I venture, therefore, to suggest a process which would be simpler, less liable to error, more difficult of interested manipulation, and more in accordance with common practice in matters analogous.

Inventors of particular cowls claim that they produce a distinct draught over and above any tendency which the air may have to escape upwards through the tube when not fitted with a cowl. Now, when a number of men think they can pull rather better than common they divide themselves into two teams and tug at the opposite ends of a rope until one or other party is drawn over the scratch. Why cannot the rival cowls be brought also to the "tug of war"?

Let two zinc tubes of (say) 6-in. diameter be fixed through the ridge of a suitable roof at about 10 ft. apart, and let their lower ends be fitted to a horizontal tube (made larger to reduce the friction of the air), and in the middle of this tube fix an anemometer. Then try the cowls each in succession, against a simple open-mouthed pipe, a trumpet-mouthed pipe, and, finally, against each other, fixing in each experiment one contrivance at the top of each of the two upright tubes, the outlets being on the same level. We shall thus have a fair struggle between them, and the anemometer will tell which is the stronger. If the "pull" varies with the force of the wind that will also be indicated; and should each cowl in turn during the same experiment be the stronger the result of a whole day's working would show on which side the balance of advantage lay.

I generally use an open-mouthed tube, the top of which is cut into several long, sharp points. Both this and the trumpet-mouthed form diminish the effect of a very strong wind, which practically stops the egress of air from a plain open pipe. The common lobster-backed cowl does this more thoroughly by keeping the outlet always turned away from the wind. If any of these patent cowls will give us, in addition, a substantial draught upwards in times of wind, and will not obstruct the flow of air during calm weather, we shall be better for knowing their names and which of them does the work best.

THOS. BLASHILL.

BUILDING CONTRACTS.

SIR,—A short time ago there appeared an advertisement asking for tenders for building a new warehouse on the Broad Quay, Bristol. I, among others, obtained a bill of quantities and estimated for the work, about which there seemed to be a glorious combination of land-surveyor, architect, and quantity-surveyor, the former having obtained the work, the architect having made the plans—I presume because the surveyor was incapable of doing so—and the quantity-surveyor took out the quantities. A day or two after the tenders were sent in a letter was received from the land-surveyor by the five contractors who were lowest on the list, saying that as the tendors amounted to a very great deal more than his estimate, would they send in amended tenders, either based on the surveyor's quantities, or quantities taken by themselves. On going to the surveyor and making inquiries as to the meaning of this, the first thing shown me was the list of tenders, and I was told there were to be no alterations whatever in the drawings and specifications. Nor were there any, but there seemed to be a suspicion that the quantities were greatly in excess of the actual work required. I had the drawings and checked the principal items, which was all I could do, seeing I only had a few hours to do that and make up and send in my amended tender. I, however, found the quantities so far as I could check them perfectly correct, and in my opinion reflecting great credit on the surveyor who took them out, and I sent back word to say I could make no material alteration in my tender; a day or two after I was shown a list of amended tenders, which, with the original list, I herewith append:—

	Original Tenders.	Amended Tenders.
Fay	£2,856	
Balmont & Quinn	2,766	£1,900
Boon	2,719	
Hayes	2,513	
Gorvett	2,420	
Eastabrook	2,380	
Price	2,280	
Stephens & Bastow	2,197	
Forse & Ashley	2,196	
Hatherley	2,190	
Wilkins & Hill	2,119	1,615
Stevens & Gardiner	2,090	1,825
Davis	1,999	1,995
Phillips, E.	1,970	1,865
Veals	1,913	1,900

The above figures are well worth studying, especially those second and eleventh from the top of the above list, the former having no right to give an amended tender. Now, I ask, is it fair or honest, taking into consideration there were no deductions in the work, that the quantities were perfectly correct, and that great care was taken to show the original list of tenders before the amended ones were sent in? Was it not simply a polite way of asking the chosen five to cut each other down for the sake of doing the work?

ONE OF THE CHOSEN FIVE.

NEW ORGANS.

Dunfermline.—The directors of the St. Margaret's Public Hall, Dunfermline, lately resolved to provide an organ, at a probable cost of about 1,000*l.* The building of the organ was entrusted to Messrs. T. C. Lewis & Co., Brixton. It measures 24 ft. in height, and 18 ft. by 10 ft. otherwise. It has five pedals of combination, twenty-six stops, and 1,522 pipes, all the metal used being what is called "spotted metal." The motive blowing power is supplied by the hydraulic engine patented by Mr. Joy, of Leeds. The case of the organ, which is composed of pitch-pine, is decorated with moulded panels.

Greenock.—A new organ, for the South Parish Church, Greenock, has just been completed and erected by Messrs. Foster & Andrews, of Hull.

VENTILATION OF SEWERS.

SIR,—I see by a paragraph in a recent issue that the invention of the system of ventilating sewers by means of cowls always turned towards the direction from whence the wind blows is attributed to Mr. Parker. This is an error. If you will turn to p. 59, vol. i. of the "Proceedings of the Association of Municipal and Sanitary Engineers," you will find it there described by Mr. Ellice-Clark, C.E., who invented it two years previously.

H. TULK.

The Brompton Oratory.—As it still continues a matter of doubt as well as interest to many of our readers to know which design for the above is chosen for execution, we are authorised to say it is that to which the first prize was awarded, and that its author, Mr. Herbert Gribble, is appointed as architect for the same.

ST. SEPULCHRE'S CHURCH, HOLBORN.

THIS historic pile is undergoing a change internally, and during the time that it has been under the hands of Mr. Billing, architect, and Messrs. Dove & Co., builders, a discovery has been made calling for note. The contract is to remove the old galleries, the vestry clerk's office, the record-room, take up and renew the floor, and renovate the interior walls.

When the workmen began their labours, on taking up the floor, it was found that the interments underneath were of the most extensive character, and in some instances they must have taken place under very peculiar circumstances. For example, under the churchwardens' pew a skeleton was found without a coffin,—only the boards of the floor serving for a covering to what had been a human being. In another place was found a skull over which the skin was stretched like a piece of parchment, and with long yellow hair adhering with as much tenacity as during life. There were found underneath the floor, beneath the joists, "two cart-loads" of skulls, as well as bones of human beings, and three perfect skeletons; and these have been removed to the vaults below, and deposited amongst 140 leaden coffins that were already there placed.

NEW AQUARIUMS.

Tynemouth.—The Tynemouth Aquarium was opened on the 28th ult. by Mr. T. Eustace Smith, M.P. The building (of which view and plans appeared in the *Builder* for June 1st), has been erected by Messrs. Aldwin, Sons, & Bray, of London; and Mr. J. R. Binks has acted as clerk of works. The heating apparatus is by Messrs. Bacon & Co. The whole of the stained glass for the music-hall and the entrance hall windows, which will shortly be completed, also all the embossed plate-glass, are being executed by Mr. H. M. Barnett, of Newcastle. The architects are Messrs. Norton & Masey, of London.

Birmingham.—The new aquarium and assembly-room at the Aston Lower Grounds, Birmingham, are in progress. From end to end the aquarium will measure upwards of 340 ft., with a width of 56 ft. The exterior will be of red and white brick, and will be surmounted with a tower nearly 90 ft. in height. In the centre of the aquarium will be a promenade about 300 ft. in length, and the tanks are arranged in rows on either side. To the left are the show-tanks, twenty-one in number. Above the aquarium will be a large room upwards of 300 ft. in length, to be used either as a banqueting-hall, assembly or ball-room, or concert-hall. Another assembly-room, which adjoins the aquarium, is 220 ft. long by 90 ft. wide, and is calculated to accommodate 5,000 persons. The building contract is being carried out by Mr. Garlick, of Saltley, from plans prepared by Mr. Thomas Naden, architect, Birmingham.

RAILWAY MATTERS.

Russia.—The Russian Government has published the following returns with regard to the working of the railways in the years 1874, 1875, and 1876:—In 1874 the length of railways open was, in round numbers, 11,000 miles, and the gross receipts, 20,000,000*l.*; in 1875 there were 12,000 miles of railway, but the receipts were only 100,000*l.* more than in the previous year; while in 1876 the length of railway had increased by about 200 miles, and the receipts by nearly half a million. Seven of the companies whose share capital is guaranteed by the Government do not pay expenses, and the seven companies possess more than 2,000 miles of railway, the deficiency from year to year being nearly half a million sterling. The receipts of twenty companies having between them more than 5,000 miles of lines, although just sufficient to pay the working expenses, have not been enough to pay the interest guaranteed upon their shares by the Government, which has had to contribute nearly 50 per cent. of the percentage guaranteed, and only eight companies have paid the guaranteed dividend without any assistance from the Government. Of the lines which were constructed without Government guarantees, all except one, 50 miles in length, have earned fair dividends; and the sole line worked by the State has, during the three years to which these returns relate, paid a dividend

of four per cent. on the capital spent in constructing it. In other words, 17 per cent. of the Russian railways have not earned their working expenses, 47·50 per cent. have not earned enough to pay the interest guaranteed, and 26 per cent. have paid their way.

Scotland.—On the 30th of August the new railway at Port Edgar, which has been constructed by the North British Railway Company, was inspected by Colonel Hutchinson, of the Board of Trade. The works were commenced about a year ago, by the contractor, Mr. T. S. Hunter, of Edinburgh, at an estimated cost of about 30,000*l.* The works consist of a landing-jetty constructed of timber, supported on piles, and measuring about 900 ft. in length. The station is placed at a little higher level than the pier, and has a wooden platform. Beyond the jetty there is a breakwater formed of whinstone blocks, from Carlinnose quarry, North Queensferry. It extends seaward for about 1,300 ft., and is finished with a massive coping of concrete. At the point of the breakwater an iron lighthouse is placed. On the shore side of the breakwater the railway is formed over a surface embankment consisting of slag. The Newhalls Station is to be discontinued, while a new station has been constructed at a point about midway between Queensferry and Newhalls. The works were carried on under the superintendence of Mr. Bell, engineer.—— Several other important improvements are in progress on the North British Railway Company's system, chiefly with the object of aiding the development of the mineral resources of Fifeshire. The absence of a direct road from the coalfields in the western district to the main shipping place—Burntisland—has long been felt, and in order to supply this want the company determined to have a loop-line constructed from a point not far from the Charlestown Junction to Townhill. The works were begun about nine months ago—the contract being taken by Mr. Thomas Chalmers, Dunfermline—and they are now in an advanced state. The line, though only measuring one mile and three quarters in length, has entailed a great amount of labour, embracing cuttings to the extent of upwards of 100,000 cubic yards, and the building of nine heavy bridges, besides a considerable number of culverts. In addition to a large staff of men, the contractor has employed one of Chaplin & Co.'s steam excavators, by which the work is greatly expedited. The estimated cost is 14,000*l.*

FINE ART EXHIBITIONS.

Edinburgh.—The third exhibition of the Albert Institute of the Fine Arts, which closed on Saturday last, is stated to have been a greater success than the two previous one. The sales of pictures have reached a total of 2,212*l.*

Kirkcaldy.—On Monday last the Kirkcaldy Fine Art Association opened its seventh annual exhibition. It contains 546 pictures in oil and water-colour.

Birmingham.—The autumn exhibition of the Royal Birmingham Society of Artists was opened on the 29th ult. The exhibition is described as being somewhat above the average. The more distinguished representatives of art who exhibit are Messrs. R. Ansdell, Alma Tadema, Vicat Cole, T. Faed, R. Elmore, E. Armitage, James Archer, J. Houston, W. P. Frith, E. Hayes, J. Hodgson, Erskine Nicol, H. O'Neill, J. E. Millais, Sir Daniel Macnee, Britton Rivière, Pettie, E. M. Ward, W. F. Yeames, F. S. Walker, Clark Staunton, G. F. Watts, and H. T. Wells.

Glasgow.—The Fine-Art Loan Exhibition, which has been open in Glasgow for some months, the proceeds being in aid of the funds of the Royal Infirmary, was closed on Saturday, the 31st ult. About 100,000 persons have visited the exhibition since it was opened.

Liverpool.—On Monday the Autumn Exhibition of Paintings at the Walker Art Gallery was opened to the public. In the evening the President of the Liverpool Art Club (Mr. P. H. Rathbone) gave a dinner in celebration of the event.

Worcester.—The sixth exhibition of pictures in connexion with the Worcester City and County Fine Arts Association opens at the Music-hall this day (Saturday), and will remain open for a fortnight.

Stockport.—An art exhibition was opened at Stockport on Wednesday. The exhibition originated with a suggestion made some months ago o have an exhibition of pictures by Stockport artists. It was subsequently decided to enlarge the scope of the exhibition by means of a loan collection. Application was accordingly made to the authorities of the South Kensington Museum for the loan of the cases of objects of art lately exhibited at the Royal Institution, Manchester, but the department declined to entertain the request. The committee of the Royal Institution, Manchester, however, considerably aided the promoters of the exhibition by lending the cases in which objects of art were shown in the recent exhibition, and Mr. W. J. Muckley, Mr. Ephraim Hallorn, Mr. Stephen Christy, Mr. Froggatt, Mr. J. Walthew, Mr. J. F. Cheetham, and Mr. James Watts have lent a number of objects, consisting mainly of Japanese *cloisonné* enamels, Persian and Indian metal work, carved ivories, mostly Indians Vienna and Dresden ware, and a few specimens of embroidery.

DRAINAGE ITEMS.

Knutsford.—At the meeting of the Altrincham Rural Sanitary Authority, on the 28th of August, the clerk reported that Mr. Newton, the engineer of the Knutsford, Dunham, and Hale drainage scheme, had had an interview with Lord Egerton, who had expressed himself in favour of the scheme, and his willingness to lease the whole of the moor to the Authority for disposing of the sewage. Mr. Newton, of the firm of Cawley, Newton, & Smith, engineers, Manchester, was instructed to prepare the necessary plans.

Dalry.—At a meeting of the Streets and Buildings Committee of the Edinburgh Town Council, on the 30th ult., letters were read from persons resident in Dalry complaining of injury to property from flooding, resulting from the overflowing of a public drain which passes under the Caledonian Railway, and threatening to hold the Council liable for the damage thus caused. The burgh engineer was (according to the *Scotsman*) instructed to do what he could for the purpose of temporarily remedying the defect, the committee not feeling warranted in recommending the Council to undertake the extension of the drainage system of Dalry at present, in view of the proposal to have the city formed into one drainage district, under the new Municipal and Police Act.

NEW INSTITUTIONS.

Children's Home, Edgworth.—On the 30th of August, Mrs. Charles Mitchell, of Aigburth, laid the memorial-stone of a new house, in connexion with the Children's Home, Edgworth, near Liverpool. The building is the gift of Mr. Mitchell, and is of the plain Italian style. It is estimated to cost 1,200*l.* The cost of furnishing it will be defrayed by Mr. Mitchell. Messrs. Parslow & Clarke, Liverpool, are the architects; and Mr. G. Neray, of Over Darwen, the contractor.

Home for Pauper Children, Ipswich.—A new home for pauper children has just been opened in Ipswich. The institution will accommodate about 200 children. The old buildings of the Boys' Home have been made to form a portion of larger building fronting on Freehold-road, St. John's. The boys' and girls' departments are separate and distinct. Besides dining-rooms, dormitories, day-rooms, kitchens, &c., there are tailors' and shoemakers' shops for boys, and at the back of the girls' department, a laundry. The latter is without special fittings, the object being that the girls should learn washing without the assistance of modern appliances. Mr. Brightwen Binyon is the architect, and the work has been carried out by Mr. R. Girling, builder.

The Prince of Wales's Monument at Bombay.—Four panels designed by Mr. Boehm to decorate the pedestal of the equestrian statue presented by Sir Albert Sassoon to commemorate the visit of the Prince of Wales to Bombay have been shipped on board the *Avondale*. The panels, which weigh upwards of three tons, have been cast from the original plaster model by Messrs. Elkington, of Myddelton-street, Clerkenwell, and are as follows:—The first, the reception of the Prince by the native chiefs; the second, a procession of native women bearing offerings in the shape of flowers and fruits; the third, the Royal arms; and the fourth, a huge square panel with an inscription

DOCKS AND HARBOURS.

Bo'ness.—Considerable progress has been made with the harbour improvement scheme, begun in September last year by the Bo'ness Harbour Commissioners. The eastern pier and coffer-dam—the contract for which was held by Mr. J. W. Morrison, Edinburgh—are virtually completed. The coffer-dam is formed by double rows of main and sheet piles, bearing planking, the central space between the piles being filled up with a compact mass of clay, to which there is added, for the purpose of giving additional strength, a backing composed of slag and stones. The dam measures 410 ft. in length and 20 ft. in width. Stretching out from the middle of the dam there is a "spur," which is intended to exclude the water from the site of the dock entrance. The east quay wall is built of concrete, strengthened with slag. The entrance to the dock will be deepened to the extent of 6 ft., and as the east quay wall is to run in a line with the west pier, there will be afforded to vessels a passage of about 200 ft. wide, and having a depth of fully 24 ft. of water in ordinary spring tides.

Tasmania.—We learn from Tasmania that the harbour defence works are being vigorously carried out, in accordance with the recent recommendations of Sir William Jervois.

CASUALTIES.

A Railway Bridge partly Destroyed.—Information has reached the office of the Bombay, Baroda, and Central India Railway that a portion of the bridge that crosses the river Nerbudda at Broach has been swept away by floods Two spans yielded to the strong current, bu fortunately the bridge was clear at the time. When the last telegram was received in Bombay the water was rapidly rising, a circumstance which caused fears to be entertained that some portions of the rest of the structure might not be able to successfully resist the large volume of water which was sweeping along the stream with such great impetuosity. Indeed, later on another of the spans was washed away. The spans of this bridge are each 65 ft. wide, and the two spans which the floods carried away were about two-thirds distant from the south or Bombay end. The accident, of course, necessitated a complete stoppage of the traffic. The new bridge, which the railway company have for some time past been constructing at this spot to take the place of the old one, will, it is hoped, be ready by the next wet season. The last time the Nerbudda Bridge at Broach suffered from the floods was on September 6, 1876, when twenty-five out of the sixty-seven spans were clean swept away. Each span is 62 ft. 6 in. long, and is supported by five thin cast-iron columns, two of which and a double line of superstructure were added after the floods of 1867. The columns penetrate for a distance varying from 25 ft. to 40 ft. into first a bed of gravel, and then into blue and yellow clays, and are, at their greatest depth, deep as the deepest in India. At the time of the accident two years ago there were 59 ft. of water in the river, while there are now only 46 ft. The total length of the bridge is about 4,100 ft.

Great Fire in Pimlico.—On the night of the 28th ult., what proved to be a very destructive fire broke out at the extensive saw-mills belonging to Mr. Joshua Knight, timber and lath-wood merchant, 175, Buckingham Palace-road. Fireman Pelley fell from a loop-hole, while carrying a hose, a distance of several feet. On being picked up by his companions, he was found to be seriously injured, and was at once conveyed to St. George's Hospital. The value of the property destroyed amounts to several thousand pounds.

Great Fire at Riga.—On the 11th ult. a great fire broke out at Riga in the principal part of the town, and raged for nearly thirty-six hours. Fourteen storehouses were entirely destroyed.

Ladder Accident.—On the 29th ult. Mr. Humphreys held an inquiry at Hackney as to the death of James Ward, aged fifty, a zinc worker, living at Hoxton. On the previous Monday he was in the act of carrying a pole up a ladder raised against the front of a house in Dalston, when the rail that he was on, near the top, suddenly snapped, and he was hurled to the ground, falling on his head; death was instantaneous. Verdict: "Accidental Death."

The Fall of an Arch in Bishopsgate-street.—The inquest on the bodies of George Colley and

Thomas J. Higgins, who were killed by the fall of an arch in the City during a storm on Saturday week (as mentioned in last week's *Builder*), was resumed on Tuesday. After the evidence of the deputy-foreman of the works, who could not account for the arch giving way unless by the supposition that "it was caused by a heavy clap of thunder," Mr. Woodthorpe, District Surveyor, said he examined the arch after it fell. The wall was in his judgment strong enough to carry the arch. He believed the accident was caused by the violent thunderstorm. There was great concussion from the lightning and thunder. In his opinion the lightning struck one of the iron columns. The foundation was of the best concrete, with sets-off, as required by the Building Act. The arch was properly constructed. The plan of the arch was submitted to witness prior to the erection, and approved of. The weight of ballast was equally distributed over the surface. The jury returned a verdict of "Accidental Death" in each case.

Landslip at Chalk Farm Tunnel.—An accident has occurred at the entrance to the tunnel at Chalk Farm Station, but unattended by any very serious results. The main line at this spot is in course of widening, and the ground, which rises to King Henry's-road for some distance above the line, has been cut away, and a wall erected about 10 ft. thick and 40 ft. high. Huge buttresses support the wing thus formed, and apparently no power could move them. But the soil here to a very great depth,—over 200 ft.,—is composed of clay, and the recent heavy rains descended the slopes of Primrose-hill and King Henry's-road, and fell upon this portion of the tunnel. The fall carried with it at least 70 ft. in length by 50 ft. in depth and 10 ft. in thickness of the side of the roadway.

Collapse of the Sunderland Fish Market.—The *Newcastle Chronicle* says that about six o'clock on Sunday morning the residents in the vicinity of the Sunderland Fish Market were surprised to notice a large portion of the northern supports and roof of the market sliding gradually into the river. The tide was unusually high at the moment, and it is supposed that it had swept away the *débris* on which rested the metal pillars that formerly ran down the centre of the market, but which latterly have formed its northern boundaries. These pillars went down, and the roof they supported was consequently lowered and broken. A considerable portion of the roof in the centre has entirely disappeared, and the other portions are hanging towards the river. Altogether the market has now the appearance of an almost complete wreck. Fortunately no person was hurt. For some time past it has been the intention of the River Wear Commission to re-erect the quay in front of what was left of the Sunderland Fish Market. They had been making preparations for a practical commencement with the work of renewal, but it is denied that their men had done anything to cause the collapse of the market.

MASTERS AND MEN.

Paris.—The *vidangeurs* of Paris,—that is, the workmen employed in emptying the cesspools of the city,—have struck for an increase of wages.

Australia.—The labour market in Australia is, according to the *Melbourne Argus*, slowly recovering from the state of extreme prostration from which it has suffered for some time past. There is, however, but little improvement in the building trades, many persons believing that house-building has been overdone in Melbourne and the suburbs. Complaints of want of work for ordinary labouring men are reported from the country, but instances are frequent of men refusing 15s. per week and their rations to make improvements on farms. There is always a large portion of the floating population who would prefer loafing around Melbourne to accepting moderate wages in the country during the dead season. It is this class who crowd the works provided by the Government, to the exclusion of the tradesmen out of work, for whom they were provided.

Newcastle-on-Tyne.—The joiners and house-carpenters of Newcastle and Gateshead are now partially on strike, against a reduction of 4s. 2d. per week.

The Nailers' Strike.—At a meeting of nailers held on the 30th ult., at Old Hill, it was resolved to "play on" until the masters conceded a revised list at the rate of 10 per cent. reduction from the list of 1875. The same resolution was passed at a similar meeting held earlier the same day at the Lye. Meanwhile, distressing accounts are given of the depth of poverty to which a great many of the nailers are reduced by the strike.

Fifty-one or Fifty-four Hours?—On Saturday a meeting convened by the Kipps workmen on strike, took place in the Temperance Hall, Coatbridge, for the purpose of discussing the fifty-one *versus* the fifty-four hours' system. Mr. Young, a delegate from Glasgow, explained the working of a new organisation instituted to maintain the fifty-one hours' system. Already, he said, fourteen different trades had amalgamated, and subscription-sheets were being distributed through the whole of the three kingdoms, from whence the money would converge into the Central Committee in Glasgow, who would distribute it to those striking for such a cause. He stated that if this fifty-four hours' system were introduced, every seventeenth man now employed would be thrown upon the labour market, and employers could fix their own terms.

Charge against a Union Secretary.—At the Wolverhampton Police-court on the 30th ult., David Price, late secretary of the Carpenters' and Joiners' Association, held at the Tiger Inn, Wolverhampton, was charged with having improperly withheld 10*l.* 18s. 4d., the moneys of the association. He was ordered to refund the sum of 2*l.* 16s. 11d., pay a fine of 2*l.* and 1*l.* costs, or in default be imprisoned for three months.

Rattening in Brickfields.—Some cases of rattening in brickyards are reported by the *Sheffield Telegraph*. At Norton Woodseats and Rotherham much malicious mischief has been committed. A third outrage has just come to light. Mr. Mayne, brickmaker, Walkley, some time ago rented a piece of land belonging to the Sharrow Vale Land Society. Last week several thousands of bricks were moulded and placed in rows to harden. On Monday it was found that 11,000 of these bricks had been irretrievably damaged by being trodden upon during the night. Work is now at a standstill.

[NOTES FROM THE NORTH.

Musselburgh.—The area known as the Mall Park, lying between the Station-road and Inveresk, has been laid out for feuing purposes. Upwards of seven acres will be occupied. Mr. J. [Newlands, builder, has already commenced operations. The Musselburgh Heritages Company are at present erecting a large number of villa residences at Linkfield, closely adjoining the Links.

Edinburgh.—At a meeting of the Streets and Buildings Committee of the Edinburgh Town Council, on the 30th of August, the question of paving the footpath on the south side of Princes'-street was under consideration. Estimates were submitted, the cost for Caithness flagstones being stated at about 13,000*l.*, for Val de Travers asphalte at about 9,000*l.*, and for selenitic cement at about 5,000*l.* The committee unanimously agreed to recommend the council to sanction the paving of the footpath with selenitic cement.

American Efforts in Steam Locomotion on Common Roads.—A prize of 10,000 dols. offered by the State of Wisconsin to the inventor of a steam wagon satisfactory to the commissioners to test it as "a cheap and practical substitute for the use of horses and other animals on the highway and farm" has not yet been won. The Commissioners report that one wagon, known as the Oshkosh patent, made a trip of 201 miles, passing over grades of not less than 1,400 ft. to the mile, in thirty-three hours and twenty-seven minutes, or an average of six miles an hour. They report further that it was capable of hauling heavy loads, that it ploughed, and that it could be used to great advantage for thrashing and hauling heavy agricultural machines from farm to farm, for heavy work upon the highway, and for much of the work done upon large farms. The wagons cost 1,000 dols. each, however, and require an outlay of from two dols. to six dols. a day to run, and the Commissioners conclude that upon such terms they cannot be considered a cheap and practical substitute for horses, mules, or oxen upon the highway or farm.

Books Received.

Sanitary Engineering: A Guide to the Construction of Works of Sewerage and House Drainage. By BALDWIN LATHAM, C.E., &c. Second Edition. London: Spon & Co. 1878.

THE second edition of Mr. Latham's valuable work forms probably the most complete and fully illustrated work on sanitary engineering which we possess, and is remarkable for its clear and logical arrangement,—a quality not always illustrated in works of this class. Starting from a general "Introduction," in which the physical laws and conditions which form the basis of sanitary philosophy are broadly stated, we have then a sketch of the history of sanitation, so far as it is known (though, in fact, information on this subject can only be gleaned very partially and by implication from the comparison of ancient authors with ancient remnants of engineering work). We then come to a statement of the various systems which have been proposed for carrying out sanitary works, and the heads or sections into which the consideration of a scheme of sanitary engineering may most properly be divided. Mr. Latham classes them as follows:—

1. The area of the district to be sewered.
2. The rainfall of the district, and the proportion it is intended or desirable to admit into the sewers.
3. The geological character and physical outline of the district.
4. The present and prospective number of its inhabitants.
5. The supply of water in the district.
6. The sanitary appliances at present in operation, or to be adopted.
7. The position of the outfall, and the mode of disposing of the sewage.

The chapter devoted to the first section includes, however, in its heading "the area *and plans* of the district to be sewered," and in connexion with this part of the subject we cannot but notice the apparently unnecessary complication introduced into the preparation of the plans by the number of different scale plans which seem to be required of the engineer on one pretext or another: between the requirements of the Local Government Act Office and the Standing Orders in Parliament, it would appear, from Mr. Latham's account, that no less than eight sets of plans, all to different scales, are required before the entire demands of red tape are satisfied. The author makes no comment on this; perhaps he has become used to it; to us it appears a very heavy drag on the carrying out of a necessary series of operations. The question of the amount of rainfall to be admitted into sewers occupies considerable space, and leads to some very interesting considerations as the effect of admixture of rainfall on the value and carriage of sewage, and the means that may be adopted to control it. Some of the diagrams illustrative of old and very defective forms of sewers and drains gain a sinister interest from the footnote appended to one of the worst forms (p. 77),—"Many of the houses in the West End of London still remain drained in this manner." In the chapter on "The Course of Sewers," we are rather surprised to find the author passing over the evils of carrying drains under houses as "more imaginary than real"; he cites the high average of health in London, where "nearly every house has a drain under it," as evidence that this fact can have little influence on health, which is, however, rather an upside-down sort of argument; and, at all events, the great inconvenience and annoyance resulting from the examination and repair of a drain within a house ought not to be underrated. The most important novelty in the chapters on the materials employed in the construction of sewers is the suggestion for the larger employment of Portland cement pipes and concrete sewers, of which the former have the advantage that, being made without burning, they can always be produced with a perfectly true circular section, and the evil of possible obstruction from imperfect jointing got rid of. Another probable advantage which this material would give, but which the author does not suggest, is that a more scientifically efficient section might be given to a pipe-drain instead of the circular form: Mr. Latham gives in his sections of sewers one of an oval pipe-drain with a nearly pointed invert (plate iv., fig. 6), which he says had to be abandoned because of the extra difficulty of getting the section true and the joints tight; but in such a material as Portland cement there would

probably be no difficulty in carrying out this section in a satisfactory manner. The reliability and economy of combined brick and concrete as a material for sewers receives important illustration by the performances of the Croydon outfall sewer, a section of which is given, consisting of a circular brick ring of only half-brickwork, embedded in concrete, which, however, is only about 6 in. in thickness, over the upper half of the ring: "This sewer was constructed above the level of the ground, and for some months was running full bore without any earth backing at the sides; and yet, though containing such a small amount of material, not the slightest leakage took place." As the author observes, no ordinary brick sewer could have borne such a test.

The important and difficult subject of the ventilation of sewers receives a great deal of illustration, sections of nearly all the methods in use being given, all of which the author considers defective in one or another point. All these include ventilation through charcoal, the great difficulty in regard to which is to preserve the charcoal from damp from the rain and street surface water and mud entering the ventilator, the operation of the charcoal being soon killed by damp; and in most cases when the charcoal gets clogged the ventilator is practically plugged up and useless for its purpose. The author gives his own method for getting over these difficulties, in the shape of a circular ventilator with a water and dirt receptacle round it, and an overflow from this which runs in a spiral in the centre space; over this spiral overflow a spiral charcoal-holder is placed, screwed down, as it were, to its proper place by being turned, by a centre handle, on the spiral overflow trough. The advantages are that any escape of sewer-gas between the charcoal-holder and the sides of the ventilator (a frequent difficulty) is prevented by the gas coming in contact in such a case with the soffit of the overflow trough, which forms the other member of the screw, and which is cast solid on the sides of the ventilator so as to leave no interstice for escape; then the gas is not so much strained through the charcoal as passed in a spiral course over and over it, thus the charcoal filter is less clogged, and when it eventually becomes too saturated to do its work, the passage of the sewer-gas is still not interfered with, nor the ventilation consequently checked. The whole thing is remarkably ingenious: the only criticism we have to suggest on it is whether, in the inevitable clogging of every surface directly exposed to the action of sewer effluvia, there will not be some difficulty in keeping the spiral bearings sufficiently clean for easy removal and replacement; it seems a sort of thing that a workman would take out and find he could not get it in its place again, some morning.

The chapters on those portions of a drainage system more closely connected with habitations, on the arrangement of water-closets and house-drains, are so full and so admirably illustrated that even any one previously ignorant of the subject would gain a very good idea of it by their intelligent perusal; the action of the flows and traps upon one another, and the whole working of a system of house drainage, is rendered exceedingly clear and intelligible by the diagrams. The author is decidedly in favour of the water-closet as the only appliance for the purpose fit to be used within a good house; and in the end we imagine this will be the general conclusion, in spite of the other systems which have been so much recommended; though he admits (in which also most of our readers will concur) that a very large number of bad and unscientific constructions of this nature are in use. One system on which Mr. Latham bestows much praise, that invented by Mr. Fowler, of Newcastle, appears to require, at all events, a little explanation before it can be accepted as so entirely satisfactory as the author seems to consider it. This is the system by which the whole of the house drainage reaches the drains through the water-closet trap, which is placed sufficiently low to come into the fall of the drainage, though the seat may be placed on any floor level above the hopper if required, by the interposition of a number of earthenware pipes placed one upon another forming a kind of shoot. The utilising of the waste water from the house drainage is an obvious advantage; but as the advantage of being "self-acting" is also claimed for this closet, we presume that it depends entirely on the flow of this drainage for all flushing. Now, unless the drainage of water from house use is larger and more constant than is usual in an average dwelling-house, it seems obvious that in many cases matter will be lying in the hopper for a considerable period waiting for a flush; and that it may even happen, under some circumstances, that the hopper-trap would become choked. Simplicity is an immense advantage in all water-closet apparatus, provided it fulfils its ends properly; but so far as we understand the Fowler apparatus from Mr. Latham's illustrations, it seems to us a little too rude and uncertain in its principle and operation.

We should, of course, have devoted far more space to such a work as this, had it not been a second edition. The first edition was fully noticed in our columns; the second is greatly increased in value by the additions which have been made, bringing it up to the point of the most recent lights on the subject of which it treats. The extensive tables of velocities and discharge of sewers, &c., which are incorporated in the book, will be of great use to those who want such a work for practical reference. We noticed a few errors, and there may be others, which should be corrected when the opportunity occurs. The surprise is, however, that a man with so busy a professional life as the author should have time to produce such a book at all, rather than that he should not have had leisure to correct it throughout quite accurately.

Miscellanea.

A "Self-acting" Fire Alarm.—At the old Town-hall, Manchester, on the 29th of August, Mr. E. B. Bright, formerly secretary and engineer of the British and Irish Magnetic Telegraph Company, exhibited his invention, "The Self-acting Fire Alarm," to a large number of merchants, manufacturers, and others. Mr. Bright gave a description of his invention, which has been patented. A small metal box, called a thermostat, which is placed in a room or warehouse, and is the means of giving the alarm, contains within it, insulated at one end by a piece of ebonite, a spring composed of brass on one side and platinum on the other. The brass expands readily with heat, the platinum very slowly, and, therefore, when any unusual increase in temperature takes place, the spring is brought into contact with a small screw point. The spring is connected with an earth wire at the place which it is wished to protect. Another wire, which can be made to suffice for many buildings, communicates with the fire-brigade office, and rings a bell, calling attention to the fact that there is a fire or an improper heat in the particular building indicated by the apparatus. It is stated that by this means fires have been detected in buildings by the fire-brigade in New York even before the occupiers of the place in question have been aware of the conflagration.

A Year's Work for the Royal Dockyards.—An amended programme of work in her Majesty's dockyards for 1878-9 has been issued. It shows a total number of 6,180 men to be employed for shipbuilding and for completing ships afloat for sea service, as compared with 6,171 in the previous year. There will also be 11,264 men employed for repairs and refits, as compared with 9,829 last year. In addition to these there are 121 men employed for store purposes at Deptford, Haulbowline, and Portland. The total strength is thus 17,565, as compared with 16,109 in the previous year. This is the average number which will be employed throughout the year. According to the work stipulated to be performed, it appears that of thirty-two vessels being repaired twenty-two are to be completed during the current financial year. There are also fifty-five ships building.

Hyde Park and Kensington Gardens.—For a considerable time past public attention has been called to the condition of the trees in Hyde Park and Kensington Gardens. The First Commissioner of Works, it is stated, is about to order a careful survey, both of the park and the gardens, so that the full extent of the mischief may be ascertained. It is considered by competent authorities that, in order to effect a certain cure for the present state of things, enclosures of certain areas of plantation must be made; and that, in addition, new plantations or avenues of trees must be laid out. The need of taking some such steps has been frequently pointed out in the *Builder*.

Mr. Stephens's Group, "The Deer Stalker."—On Friday in last week the city of Exeter was presented with "The Deer Stalker," which is regarded by many as the masterpiece of Mr. Stephens, the sculptor. The presentation is chiefly due to the suggestion of a number of Devonshire men living in London. "The Deer Stalker" was felt by them to be the greatest of the many high works of art produced by Mr. Stephens, and it was thought well to pay him the compliment, and his native city the honour, of securing the sculpture with the object of erecting it in Exeter. The representation is that of a deer stalker, who, in a crouching position, is intently watching the movements of the deer; the pursuit has worked the stalker up to a pitch of high excitement, and this excitement has evidently been communicated to the hound alongside, so that the man has to hold in the dog lest he should set out in pursuit before the proper moment had arrived. The representation is in bronze. The sculpture has been placed on a pedestal of granite, which bears on its face a bronze tablet with the inscription:—

"'THE DEER STALKER,'
by
E. B. STEPHENS, A.R.A.
Presented to his native City by a number of friends and admirers of the Sculptor during the Mayoralty of H. D. Thomas, Esq. A.D. 1878."

The High-street end of Bedford-circus is the site. The granite for the pedestal and base is from the Caerleon quarries, and was supplied by Messrs. Stephens & Son, of Fore-street (Mr. Stephens is a brother of the sculptor). The iron rail surrounding the statue was supplied by Messrs. Garton & King.

London Bridge.—A committee of the Corporation of London, to whom it was referred in March, 1878, to take the necessary steps for obtaining parliamentary powers for raising, upon the credit of the Bridge-house Estates, the requisite funds for increasing the width of London Bridge, at the estimated cost of about 75,000*l.*, have certified that they caused a Bill to be prepared and presented to Parliament for effecting the above object, but that it was abandoned owing to a communication from the Government that they could not assent to its passing during last session. The Bill having been withdrawn, the committee thought it advisable that, prior to the next session of Parliament, a conference should be held with her Majesty's Government as to the necessity and propriety of increasing the width of London Bridge, and that the Government should be furnished with all such information as they may require upon the subject, with the view of obtaining their consent to such widening; and the committee recommended that they should be authorised to hold such conference, and furnish the Government with the information they may require.

Finances of the Paris Exhibition.—In the original estimates, the total cost of the Exhibition buildings was calculated at 35,313,000 francs, or 1,412,520*l.*, but it has been ascertained that it will actually not be under 50,000,000 francs, or 2,000,000*l.*, the increased cost being due mainly to the great difficulties experienced in forming the foundations on the unstable grounds of the Trocadéro. The direct revenues of the Exhibition from the sale of season and daily tickets, &c., are estimated at 14,000,000 francs, or 560,000*l.*, being based on the takings of the Exhibitions of 1855 and 1867, which were respectively 3,100,000 francs, or 124,000*l.*, and 10,765,000 francs, or 430,600*l.* It is calculated besides that the sale of the old materials of the Exhibition buildings, when taken down, will produce about 7,500,000 francs, or 300,000*l.* Thus the total estimated direct revenue would amount to 21,500,000 francs, or 860,000*l*, which, with a probable cost of 50,000,000 francs, or 2,000,000*l.*, leaves a deficit of 28,500,000 francs, or 1,140,000*l.* Against this are set surplus receipts by the Government and the municipality of Paris calculated to amount to at least 100,000,000 francs, or 4,000,000*l.*, derived from Customs' duties, taxes on railways, omnibuses, and cabs, stamps for letters and telegraphic despatches, and last, not least, excise duties on wines and spirituous liquors.

The Trade Union Congress.—The eleventh annual Trade Union Congress will commence its sittings at Bristol on Monday next, and the meeting will extend over the whole week. About 140 delegates from all parts of the country will be present.

Yellow Fever.—The Surgeon-General of the United States Marine Hospital Service has issued a report on the epidemic of yellow fever which is now raging in the Southern States. He says :—

"The weight of scientific evidence seems to warrant the conclusion that yellow fever is produced by an invisible poison, capable of self-multiplication outside of the human organism, which it enters through the air passages. The poison germ or miasm is a product of the tropics. Yellow fever has prevailed in most of the Gulf and Atlantic cities, and in many of the towns along the Mississippi river. In some instances it has been carried inland with the people fleeing from infected localities, but it has never shown a disposition to spread epidemically at points remote from the continuous water roads of commerce, or to lodge in high salubrious places. The cities of the great lakes have always been free from the disease. Yellow fever cannot be said to be epidemic in the United States, from the fact that in some years it does not appear, though the imported germ undoubtedly survives the mild winters. It appears to have about as much resistance of cold as the banana plant. When the banana stalk is killed down by the frost, the yellow fever does not recur until again imported. The germ is transmissible. It is capable of being transported in the clothing or personal effects of passengers or sailors, but its spread from one city to another is chiefly accomplished by vessels, their damp, filthy holds and bilge water being its favourite lurking places. Confinement, moisture, and high temperature favour the multiplication or virulence of the poison."

The late Mr. David Cousin, Architect.—Intelligence reached Edinburgh on Tuesday night of the death, on the 14th ult., at Sans Souci, Louisiana, U.S. (whither he had gone for the benefit of his health) of Mr. David Cousin, architect, who for about thirty years was Superintendent of Works to the Edinburgh municipality. According to the *Scotsman*, he was born in 1809 at North Leith, where his father at that time carried on business as a joiner. After learning his father's trade, and receiving instruction in mathematics from Mr. E. Sang, David was articled to the late Mr. Playfair, architect, and remained in his employment while two of his most important works,—Donaldson's Hospital and the National Gallery on the Mound,—were in course of erection. In his 22nd year Mr. Cousin commenced practice on his own account, and speedily made headway in the profession. Want of space compels us to defer until next week any detailed account of his career and works.

Shipbuilding on the Clyde.—The *Scotsman* says that the amount of work turned out by the Clyde shipbuilding firms during the month of August has been considerably larger than in the previous month. In addition to a war corvette, three large first-class ocean steamships were launched. There was only one sailing vessel amongst the number built, all the others being screw steam vessels. The vessels launched numbered twenty-one, and their united tonnage was 21,100 tons—an average of 1,000 tons each. As compared with previous Augusts, the aggregate tonnage is about 10,000 over the same month in 1876 and 1875, but 4,000 tons under August, 1874. The nine months show better than any former year, excepting 1874. The improvement over last year is 48,000 tons, and the decrease as contrasted with 1874 is 15,000 tons. The number of vessels on the stocks is eighty-one.

Messrs. Mintons and their Workpeople.—At the Paris Exhibition Messrs. Mintons, of Stoke-upon-Trent, have taken the highest honours awarded for the productions of the potteries of the world; and in order to celebrate their success they entertained their workpeople on the 24th ult. The whole of the hands employed, about 1,680 in number, were paid their wages an hour earlier than usual on that day; and each man, woman, and young person was supplied with a railway ticket available to Rudyard and back. After tea Mr. C. M. Campbell, M.P., the head of the firm, delivered an address, in the course of which he said he thanked his workpeople sincerely for their active co-operation, which had enabled them to accomplish the work that had been done. Whether it be the labourer who removed the shraff, the clay getter, or the slip maker,—all, up to the highest branch, had worked for the honour now obtained.

A Dredger for Newhaven Harbour.—On the 15th ult. a new twin-screw hopper dredger of 700 tons, built and engined by Messrs. Wm. Simons & Co., was launched complete from the London Works, Renfrew. It is named *Neptune*, and is the property of the Harbour Commissioners of Newhaven, Sussex. The dimensions of the vessel are,—Length, 150 ft.; breadth, 32 ft.; and the capacity of its hopper-cavity is 500 or 600 tons. It will dredge from 6 in. to 25 ft. depth, and it is fitted with two sets of compound engines, of 75 nominal horse-power.

Corporations and Gas-Stoves.—Mr. Edwin Smith, the secretary to the Corporation of Birmingham Gas Department, publishes an official notification to the effect that the department is now prepared to sell cooking-stoves, the periodical instalments for which may be spread over three years. As this is quite a "new departure," and likely to form a precedent for other go-a-head corporations owning gas-works, we may explain that the Birmingham Gas Department proposes to charge for the higher price stove the bare cost: that is to say, the stove that they would sell for 7*l.* 10s., less 5 per cent. for cash, they will hire and keep in repair for three years for the same amount paid in twelve quarterly instalments of 12s. 6d. each. For the smaller class of stoves the charge will necessarily be a few shillings more than the retail price, in order to cover outlay. In each case the cost of fixing the stove will have to be paid by the hirer, but beyond this, and the quarterly payment, no other charge will be made to him.—*Hardware Trade Circular.*

A Tornado in America. — A terrible tornado burst at Wallingford on the evening of the 9th ult. The names of thirty-two persons killed are given, and of very many injured. It was estimated that property was destroyed in Wallingford to the amount of $150,000. Right in the path of the gale stood the Roman Catholic Church, hemmed in on three sides by a cemetery. The church was a plain one, worth, perhaps, less than $2,000. The storm, to judge from the appearance of the ruin, ploughed into the foundations, pressing them away from the framework. Then the walls, side, and back were crushed in, and the roof fell so as to cover all completely. A more complete wreck than this church could not have been made except by fire. It is literally a mass of firewood.

Artisan Reporters at the Paris Exhibition.—More than 120 artisans have, up to the present time, been sent to the Paris Exhibition as reporters on the products of various trades and manufactures by the joint committee of the Royal Commissioners and the Society of Arts. The expenses are borne partly by the joint committee and partly by the employers of the men, and in some cases by the localities whence the artisans came. The rest of the men to be selected by the committee will be immediately sent to Paris. Some of the artisan reporters have returned to England, and are busy preparing their reports in their respective sections. The city of Bristol has sent ten, the city of Edinburgh twelve, Leeds six, and the city of Dublin twenty-five artisans to the Paris Exhibition.

Pillar Letter-Boxes.—A useful invention has recently been introduced by Mr. Thomas Ollis, engineer, in some of the pillar letter-boxes at Liverpool. The door of the pillar-box is made to shut with a spring, and in so shutting it moves a plate showing the hour of the last clearance. By this simple means the public are at once enabled to ascertain whether the box has been cleared for a particular delivery, and the post-office have a check upon their men. If an outlying letter-box were left uncleared, as now sometimes happens (or if cleared before the specified time, which is occasionally the case), there would be a ready means of detection. The mechanism would be, of course, worse than useless if it were not thoroughly reliable, but it is stated to have been successfully at work in Liverpool for some months.

Foresight. — Some recent occurrences on railways should lead careful men with families to look to the advantages offered by the assurance companies. Mr. William Hopkinson, of the Corn Exchange, who was killed endeavouring to cross the line at Addlestone Station, and leaves four children, held a policy against accidents, for 1,000*l.*, of the Railway Passengers Assurance Company, Cornhill.

Another Well, so called, has been found in the City, dating from the Roman occupation. The site is No. 9, Walbrook. It is about 22 ft. in depth, the upper portion being constructed with Kentish rubble, and the lower, to the extent of about 10 ft. being lined with chalk, without cement or other material between the courses.

Obituary.—We regret to learn that the family of Mr. John Everett Millais, R.A., are thrown into mourning by the death at Powerswell, Perth, N.B., of his second son, at the age of 20. He suffered much and died resignedly.

Hampton Court House.—This old mansion erected by Sir Christopher Wren, was sold by auction on Monday, by Messrs. Slade & Challen. According to the *Mid Surrey Times*, the bidding commenced at 6,000*l.*, and rose to 14,000*l.*; the property being ultimately bought in at 15,000*l.* The reserve price, however, was not nearly reached. The mansion stands in about 8½ acres of land.

Building in Edinburgh.—Building operations are proceeding apace in Edinburgh and its suburbs, and the *Scotsman* devotes two columns of space to an enumeration of the new streets which are being laid out and built on the Mayfield, Preston Grange, Craigmillar Park, Lower Grange, Blackford, and Woodburn estates.

Surveyorship, Ashford.—At a special meeting of the Ashford Local Board, on the 29th ult., Mr. A. S. Robinson, late surveyor of Newtown, in Wales, was elected surveyor to the Board, at a salary of 150*l.* per annum. There were fifty candidates.

TENDERS

For the erection of Congregational chapel, East Cliff, Bournemouth. Messrs. Kemp, Welsh, & Pindar, architects. No quantities :—

Stroud	£6,274 0 0
Minty	5,600 0 0
Sharlan & Griffin	4,975 0 0
George	4,689 0 0
Lawson & Stanley	4,398 15 0
Brown	4,200 0 0
Pike	4,013 0 0

For the erection of new printing-works, Tower-street St. Giles. Mr. C. J. Shoppee, architect :—

Bywaters	£8,875 0 0
Sewell & Son	8,838 0 0
Brass	8,590 0 0
Rider & Sons	8,518 0 0
Conder	8,475 0 0
Merritt & Ashby	8,354 0 0
Shaw	7,954 0 0
Cox	7,579 0 0
Braid & Co.	7,497 0 0

For the Wesleyan chapel and schools, Teddington. Mr. Maurice H. Pocock, architect. Quantities by Messrs. Bull :—

Colls & Co. (too late)	£3,397 0 0
Carless	3,389 0 0
Collinson	3,350 0 0
Harris & Bonell	3,280 0 0
Higinbotham, Brothers*	2,910 0 0

* Accepted. Described to us as members of the Building Committee, and the only competitors allowed to be present at the opening of the tenders.

For boys' school and residence at South Petherton. Mr Henry Hall, architect :—

Langdon & Pole	£1,780 0 0
Trask	1,600 0 0
Hallett & Mumford	1,504 13 0
Lye & Son	1,469 0 0
Staple & Son	1,367 0 0
Walter	1,354 0 0
Rowsell	1,320 0 0
Sanders	1,319 0 0
Davis	1,310 0 0
Pitman & Fane	1,300 0 0

For the erection of cemetery chapels, boundary walls, &c., Langport. Mr. Henry Hall, architect :—

Webb	£1,218 0 0
Davis	1,185 0 0

For farm-house and homestead, for the Tythe Farm, North Cadbury. Mr. H. Hall, architect :—

Pitman & Son	£2,000 0 0
Francis & Son	1,985 0 0
Seward & Norris	1,886 0 0
Cox	1,760 0 0

For the demolishing and re-erection of the Town Arms Inn, Red Lion-square, Nottingham. Mr. S. Dutton Walker, architect :—

Messom	£995 0 0
Marriott & Wartnaby	990 0 0
Fox	984 0 0
Dennett	976 15 0
Underwood	967 18 0
Tutin	950 0 0
Hollingsworth	933 0 0
Ireson, Gray, & Wade	925 0 0
Jelley	899 0 0
Bailey	881 15 0
Harrison	880 0 0
Roberts & Perkins	847 0 0

For clerks' offices, dispensary, &c., for the parish of Saint George-in-the-East, Middlesex. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied :—

Hofern	£4,678 0 0
Somerville	3,895 0 0
Blandford	3,395 0 0
Wagner	3,297 0 0
Parker & Evans	3,230 0 0
Sampson & Parish	3,209 0 0
Dove, Brothers	3,175 0 0
Wise	3,050 0 0
Crook	2,997 0 0
Homan	2,995 0 0
Sawyer	2,990 0 0
Hearle	2,875 0 0
Prout	2,850 0 0
Taylor & Parfitt	2,847 0 0
Palmer (accepted)	2,599 0 0

For laundry, mortuary, &c., at the Highgate Infirmary, for the Guardians of the Holborn Union. Mr. H. Saxon Snell, architect:—

Kirk & Randall	£7,950	0	0
Crockett	7,745	0	0
Perry & Co.	7,543	0	0
Wall, Brothers	7,500	0	0
Brass	7,436	0	0
Chappell	7,370	0	0
Mowlem & Co. (accepted)	7,200	0	0

For additional stabling, Castle-street, for Messrs. T. M. Fairclough & Son. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Hearle (accepted)	£793	0	0

For house and shop at Bow-green, Kent, for Messrs. Walls & Son. Mr. G. Friend, architect. Quantities by Mr. T. Potter:—

Wiltshire	£2,377	0	0
Clements & Wallis	2,048	0	0
Bridge	2,040	0	0
Faircloth & Son	1,975	0	0
Calland & Son	1,950	0	0
Bishop	1,840	0	0
Wood (accepted)	1,674	0	0

For six cottages at East Malling, Kent, for Mr. T. Phillips. Mr. G. Friend, architect. Quantities by Mr. T. Potter:—

Bishop	£1,701	18	0
Wood	1,667	0	0
Church	1,452	7	0
Hodge	1,424	11	5
Pye (accepted)	1,398	10	0

For alterations and additions to servants' office, at Chilston Park, Kent, for Mr. A. Akers Douglas. Mr. G. Friend, architect. Quantities by Mr. T. Potter:—

Clement & Wallis	£3,060	0	0
Bishop	2,748	5	0
Vaughan (accepted)	2,679	0	0
Bridge	2,648	0	0
Fowler	2,556	0	0

For alterations and repairs to warehouse, Adam and Eve-court, Oxford-street, for Mr. Sellick:—

Gritten (accepted)	£195	10	0

For new offices for Messrs. J. Fuller & Co., brewers, Maidenhead. Messrs. Cooper & Day, architects:—

Groome	£2,459	0	0
Claridge	2,340	0	0
Kempster	1,990	0	0
Woodbridge	1,897	0	0
Jones & Co.	1,890	0	0
Steven & Barstow	1,889	0	0
Cox	1,889	0	0
Vilner & Sons (accepted)	1,864	0	0

For general repairs and re-arrangement of seating to St. Katherine Cree Church, Leadenhall-street, exclusive of glazing, heating, and gas-fitting. Mr. Robert P. Notley, architect. Quantities by Messrs. Linsdell & Giffard:—

Browne & Robinson	£3,485	0	0
Greenwood	3,445	0	0
King & Sons	3,180	0	0
Falkner	3,096	0	0
Ashby & Horner	2,959	0	0
Colls & Sons	2,957	0	0
Philps & Bisiker	2,778	0	0
Messom	2,525	0	0
Prebble (accepted)	1,918	0	0

For Chiswick main drainage. Contract No. 4. Mr. H. O. Smith, engineer:—

Priddle	£8,595	0	0
Williams, Son, & Wallington	8,500	0	0
Keeble	8,400	0	0
Nowell & Robson	7,828	0	0
Crockett	7,592	10	0
Dickinson	6,750	0	0

For alterations and additions to Latimer Chapel, Bridge-street, Mile-end. Mr. W. Blackmore, architect:—

Wood	£1,623	0	0
Judd	1,265	0	0
Saunders	795	0	0

For building house and shop, No. 333, Euston-road, for Dr. Knaggs. Mr. J. R. Furniss, architect:—

Baugh	£1,240	0	0
Bishop	1,148	0	0
Hatcham & Son	1,050	0	0
Anley	1,048	0	0
Gould & Brand	1,048	0	0
White (accepted)	983	0	0

For alterations at the Torriano Arms, 140, Leighton-road, Kentish-town, for Mr. James. Mr. J. R. Furniss, architect:—

Hatcham & Son	£860	0	0
White	747	0	0
Bishop	712	0	0
Toms	618	0	0
Benstead & Sons	598	0	0
Gould & Brand	578	0	0
Anley (accepted)	530	0	0
Plate-glass for the above.			
Gibbs (accepted)	£109	0	0

For the erection of farm-building, Tottenham, for Mr. Howard. Messrs. Phillip D. Tuckett & Co., surveyors:—

Gibbon & Mitchell	£250	0	0
Pocock	230	0	0

For alterations and additional stories to No. 29B, Albemarle-street, Piccadilly, for Mr. Butcher. Mr. H. W. Perrers, architect:—

Gibbon & Mitchell (accepted)	£1,417	0	0

For the erection of stables at Cook's Bridge, Lewes, for Mr. James Nightingale. Messrs. Hill, Grylls, & Wilcocks, architects. Quantities supplied:—

Somerville & Hill	£1,126	0	0
Peters & Redford	1,062	10	6
Earnie	1,053	0	0
Longley	1,050	0	0
Beale	963	0	0
Fittings for the above.			
Musgrave & Co. (accepted)	£590	0	0

TO CORRESPONDENTS.

N. H. (let him take advice on the spot. The district surveyor might help him. He has probably not occupied the house long enough to enable him to bring an action for obstruction of light and air).—A Builder (would seem to have a good case, but it would depend on circumstances. He should take advice on the spot).—Concrete Houses (several letters in reply to G. G. shall have attention next week).—H. G. H.—Dr. G.—G. W.—W. V.—T. R. S.—Mr. T.—M. & Co.—J. N.—J. S. M.—C. D.—T.—W. H. L.—T. B.—H. A. G.—W. Son & A.—W. & J. F.—A. T.—Sir W. A.—C. G.—J. K.—H. G.—H. O. S.—J. & H.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

FOUR Lines (about THIRTY words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

REPLIES TO ADVERTISEMENTS,

Addressed Box ——, Office of "The Builder,"

Cannot be forwarded, but *must* in all cases be *called for*, and the Office Receipt produced.

THE CHARGE FOR A BOX IS AS UNDER:—

For "Situations Wanted" Advertisements ..... 3d. per Week.
For all other Advertisements ..... 6d. per Week.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, King-street, Covent-garden, W.C. to

DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied *direct* from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, *prepaid*. Remittances payable as above.

Bath Stone of Best Quality.
RANDELL, SAUNDERS, & CO. (Limited),
Quarrymen and Stone Merchants.
List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [Advt.]

Bath Freestone in Blocks of all sizes, warranted sound, and delivered at any Port or Railway Station.—YOCKNEY & COMPANY, Sole Owners of the CORSHAM DOWN QUARRY, Corsham, Wilts, to whom all letters should be addressed. [ADVT.]

Yorkshire Stone.—Every description Sawn or Worked, ready for fixing if required. Sawn Staircases, Sawn Balconies, Sawn Landings, Sawn Steps, Sawn Coping, &c.
THOMAS WOOD & CO., Spinkwell and Cliff Wood Quarries, BRADFORD, YORKSHIRE.
London Depôt: Bridge Wharf, 283, Kingsland-road, N.E. Mr. J. J. Griffiths, Agent. [ADVT.]

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [ADVT.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for dampcourses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.]

VERITY BROTHERS.
Patent Ventilator, or Air-Propeller, for the introduction of Cold or Warm air into Dwellings, &c.
The machine may be seen in action at their Show-rooms, 127, Regent-street, London, W.
The apparatus consists of a drum with a double set of fans, which are worked by a fly-wheel placed in the centre, and on the same axle as fans. The motive for this fly-wheel is arrived at by a small jet of water being directed on to it, causing both the wheel and fans to revolve with great velocity; the air passing through the machine at a rate equal to 2,500 feet per minute, if desired, according to size of apparatus.
N.B.—The above machine may be used either as an exhauster or injector, as may be preferred, or both objects combined.
Also Patentees of the Fireclay Burners for Gas Fires and Cooking Purposes, and Patentees of the Tubular Gas Boiler for Baths and Conservatories, &c.
Designers and Manufacturers of Lamps and Candelabra.
Office and Works, 155, Queen's-road, Bayswater, W. [ADVT.]

Whitland Abbey Green Slates.—These slates are of a grey green tint, are stout, and made in all sizes. A large stock available for immediate delivery.—For further particulars, apply to MANAGER, Clynderwen, R.S.O., Carmarthenshire. [ADVT.]

Penrhyn Slates.—Messrs. R. NEWTON & CO. Carnarvon, supply Penrhyn best BLUE, RED, and GREY SLATES, at the lowest prices, from Mold Junction to any town in England. Delivered prices will be sent upon application. —[ADVT.]

J. Sessions & Sons, Docks, Gloucester, Manufacturers of ENAMELLED SLATE and MARBLE CHIMNEY-PIECES, URINALS, &c. WELSH ROOFING SLATES direct from Quarries to any Station in the Kingdom. Reduction in Price of Small Sizes. [ADVT.]

MICHELMORE & REAP,
Manufacturers of
CHARLES COLLINGE'S PATENT
COLLINGE'S PATENT HINGES, LEVER, SCREW, & BARREL BOLTS
and IMPROVED GATE FITTINGS of every Description.
36A, BOROUGH ROAD,
Discount to Builders. Illustrated List two stamps. LONDON, S.E.

J. L. BACON & CO.
MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE, DORSET SQUARE, LONDON, N.W.
Illustrated Pamphlet on "Heating" post free for Twelve Stamps.

With Illustrations, demy 8vo. cloth, 4s.; by post, 4s. 4d.
CONCRETE: its USE in BUILDING; and the CONSTRUCTION of FLOORS, ROOFS, &c.
By THOMAS POTTER,
Clerk of the Works to the Right Hon. Lord Ashburton.
London: F. W. REYNOLDS & CO. 73, Southwark-street, S.E.

Now ready, with 42 Illustrations, cr. 8vo. cloth, price 6s. post-free.
MR. BANISTER FLETCHER'S NEW TEXT BOOK,
QUANTITIES,
in Tabulated form; explanatory of the best methods adopted in the measurement of Builders' Work, &c. with Tables of the various Trades, Tables of Constants for the valuation of Labour, &c.; and a complete Index for ready reference.
"A good treatise, by a competent master of his subject."—*Building News.*
London: B. T. BATSFORD, 52, High Holborn.

Just Published, 8vo. cloth, 30s.
SANITARY ENGINEERING: a Guide to the Construction of Works of Sewerage and House Drainage, with Tables for facilitating the Calculations of the Engineer.
By BALDWIN LATHAM, C.E. M. Inst. C.E. F.G.S. F.M.S. Past President of the Society of Engineers.
Second edition, with numerous plates and woodcuts.
London: E. & F. N. SPON, 46, Charing-cross.
New York: 46, Broome-street.

SKETCHES for COTTAGES, &c.
By R. NORMAN SHAW, R.A.
Twenty-eight Original Designs, to scale, with plans, each 14 inches by 11 inches, in photo-litho, drawn expressly for this work. Price of the whole twenty-eight Designs bound in cloth, one guinea; or any of the Sketches can be obtained separately for 1s. each. List of subjects on application.
To be obtained only of the Publisher, W. H. LASCELLES, No. 191, Bunhill-row, London, E.C.

PUBLICATIONS by the SOCIETY for IMPROVING the CONDITION of the LABOURING CLASSES:—
DWELLINGS for WORKING PEOPLE, by HENRY ROBERTS. F.S.A. 7s. cloth, with numerous Illustrations and Plans. Also, by the Same,
HOME REFORM. Fifth Edition.
PLANS of the SOCIETY'S MODEL HOUSES, DESIGNS for COTTAGES, &c.
No. 21, Exeter Hall, Strand, W.C.

Second Edition, enlarged and revised, cloth, 8vo. Price 3s. post-free.
IMPROVED SYSTEM of BOOKKEEPING by Single and Double Entry, specially adapted for BUILDERS and CONTRACTORS. By the gainer of the Birkbeck Prize. "A concise, simple, and accurate guide."—*Building News*, May 10th, 1878.
London: HENRY C. BEVIS, 97, Lambeth-road, S.E.

JOHN WHITEHEAD & CO.'S
New Illustrated Catalogue,
1878,
With Revised List of Prices of
BRICK, TILE, and PIPE MACHINES,
With all the Recent Improvements,
CLAY-CRUSHING ROLLER MILLS,
BRICK and TILE PRESSING MACHINES
PATENT SANITARY PIPE MACHINES,
PUG-MILLS, &c., &c.,
Can be obtained, post free, by application to
JOHN WHITEHEAD & CO.,
Albert Works, Preston.